

TRANSPORTATION IMPACT STUDY

8465 BOSTON CHURCH ROAD

**TOWN OF MILTON
HALTON REGION**

PREPARED FOR:

AR LANDING HOLDINGS INC.

PREPARED BY:

**C.F. CROZIER & ASSOCIATES INC.
2800 HIGH POINT DRIVE, SUITE 100
MILTON, ON L9T 6P4**

SEPTEMBER 2025

CFCA FILE NO. 2878-7432

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Revision Number	Date	Comments
Rev.0	September 2025	1 st TIS Submission

Executive Summary

AR Holdings Inc. retained C.F. Crozier & Associates Inc. to prepare a Transportation Impact Study with the goal of re-zoning the site from Institutional (I-B) to Industrial (M2). The site is located at 8465 Boston Church Road in the Town of Milton.

The study analyzed the operations of the following intersections:

- Boston Church Road and Lawson Road
- Boston Church Road and James Snow Parkway North
- Lawson Road and Esquesing Line
- Boston Church Road and Site Access

It was found that the intersections currently operate well with a Level of Service "B" or better. The maximum control delay was found to be 17.6 seconds, and the maximum volume-to-capacity ratio was found to be 0.49 observed at Esquesing Line and Lawson Road for the eastbound through movement in the weekday p.m. peak hour. These metrics indicate that the study intersections have reserve capacity for future increases in traffic volumes.

A site plan has been prepared by Robert Russell Planning Consultants (dated August 2025). It should be noted that no new buildings are being proposed, the trips generated by the site are expected to follow the client's expected operations. The Client has informed us that the proposed transportation terminal is projected to generate a total of 20 - 25 auto trips during the weekday a.m. and 20 - 25 auto trips during the weekday p.m. peak hours. This results in 40-50 two-way trips for the a.m. and p.m. peak period, respectively. The maximum 25 trips generated was used for the analysis.

The study intersections are expected to continue to operate well with a Level of Service "B" or better under the existing 2025 baseline conditions with the addition on site generated traffic. A maximum control delay increment at all intersections and under all horizon years considered is forecast at 18.2 seconds. A maximum v/c of 0.49 is anticipated at Esquesing Line and Lawson Road for the eastbound through movement in the weekday p.m. peak hour. These metrics indicate that the increase in traffic volumes to the site have a negligible impact on the study intersections and they continue to operate acceptably.

Based on the study findings, the proposed development can be supported from a traffic operations perspective as the development is not expected to materially impact the study road network.

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1.0 Introduction

AR Holdings Inc. retained C.F. Crozier & Associates Inc. (Crozier) to complete a Transportation Impact Study to support the Site Plan application (SPA) and Zoning By-law Amendment (ZBA) for the proposed re-zoning of the site located at 8465 Boston Church Road (the site) in the Town of Milton (Town) from Industrial (I-B) to Industrial (M2). The site is proposed to serve as a transportation terminal.

1.1 Developments Lands

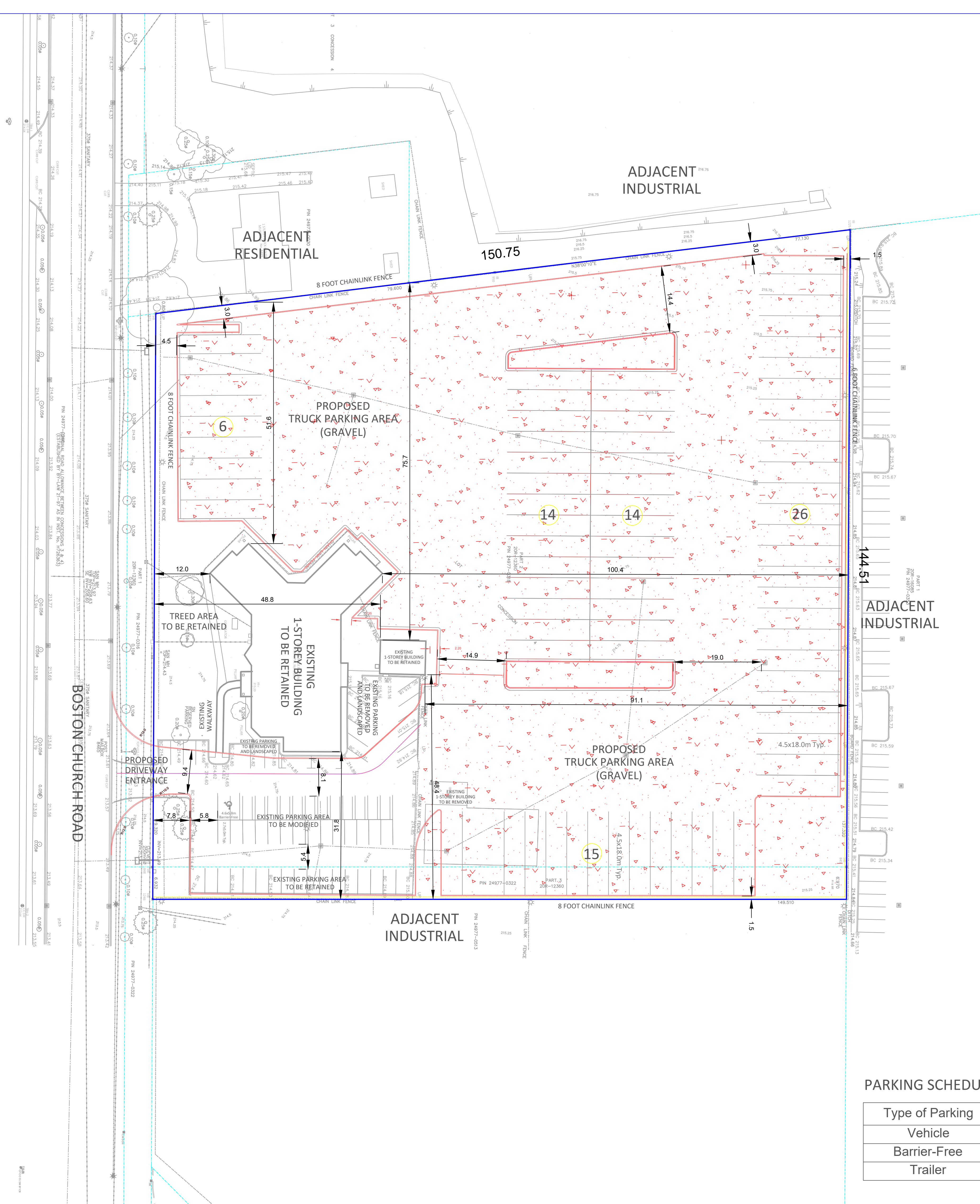
The site is bound by Boston Church Road to the west, truck yards to the south and the north, and an industrial warehouse to the east. **Figure 1** includes the Site Location Plan.

1.2 Development Proposal

At this time, a site plan has been prepared for the proposed development by Robert Russel Planning Consultants dated August 2025. The existing 1-storey garage on the site is to be removed, no new buildings are proposed on site. Access to the site is proposed through one full-moves access on Boston Church Road. The site is providing 47 vehicle parking spaces, 1 barrier free parking space, and 78 trailer spaces.



	8465 Boston Church Road	 CROZIER CONSULTING ENGINEERS	Figure 1
	Site Location		Project No. 2878-7432 Date, September 2025 Analyst, Shaira Ahmed



ZONING PARAMETERS

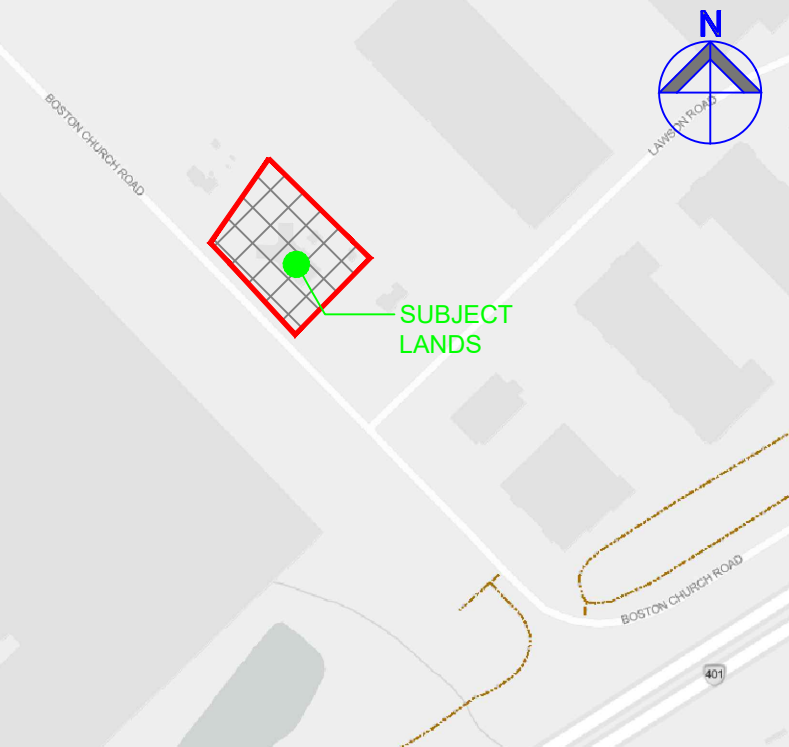
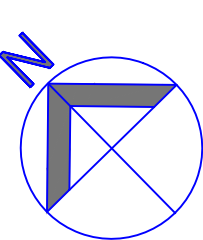
Accessory Building (1 Storey) - To Remain				
ZBL Section	Parameter	Required	Provided	Existing?
4.1.2.1(i)	Accessory Building/Structure Maximum Area	N/A in M2 Zone (4.1.2.1(1)(ii))	71.3 m ²	Yes
4.1.2.1(1)(a)	Accessory Building/Structure Maximum Height	5.5 m	Unknown	Yes
4.1.2.1(1)(b)	Minimum Setback from Interior Lot Line	3.0 m	75.7 m (North), 48.4 m (South)	Yes
4.1.2.1(1)(d)	Minimum Setback from Rear Lot Line	3.0 m	91.0 m	Yes
4.1.2.1(1)(e)	Minimum Setback from a Residential Zone	9.0 m (per Table 8B)	75.7 m	Yes

Accessory Building (Garage) - To Be Removed				
ZBL Section	Parameter	Required	Provided	Existing?
4.1.2.1(i)	Accessory Building/Structure Maximum Area	N/A in M2 Zone (4.1.2.1(1)(ii))	36.4 m ²	Yes
4.1.2.1(1)(a)	Accessory Building/Structure Maximum Height	5.5 m	Unknown	Yes
4.1.2.1(1)(b)	Minimum Setback from Interior Lot Line	3.0 m	107.2 m (North), 20.5 m (South)	Yes
4.1.2.1(1)(d)	Minimum Setback from Rear Lot Line	3.0 m	81.8 m	Yes
4.1.2.1(1)(e)	Minimum Setback from a Residential Zone	9.0 m (per Table 8B)	107.2 m	Yes

Principal Building/Use				
ZBL Section	Parameter	Required	Provided	Existing?
4.1.2.4(i)	Waste Storage Location	Principal Building	Principal Building	Unknown
4.1.2.5(i)	Ground Level HVAC Setback from Lot Line	3.0 m	35.6 m (south) Shortest Distance	Yes
4.5.1	Maximum Fence Height	3.0 m	2.5 m (8 feet)	No
Table 5A	Minimum Perpendicular Parking Space Length	5.8 m	5.0 m	Yes
Table 5A	Minimum Perpendicular Parking Space Width	2.75 m	2.77 m	Yes
5.0(ii)	Minimum Width of Parking Aisle	6.0 m	5.4 m	Yes
5.11(ii)	Oversize Vehicle Parking Setback to Street	(per Table 5C)	4.5 m	No
5.11(ii)	Oversize Vehicle Parking Setback to Side/Rear Lot Lines	1.5 m (per Table 5C)	1.5 m (3.0 m to residential zone)	No
Table 5E	Required Parking for Accessory Office	1 space per 30 m ² 30 spaces	1 space per 19.7 m ² 45 spaces	No
Table 5F	Minimum Accessible Parking (based on required parking of 30 spaces)	1	1	No
5.16.1(i)	Accessible Parking Space Length	5.8 m	5.8 m	No
5.16.2(i)	Accessible Parking Space Width	4.6 m	4.6 m	No
Table 5I	Loading Space Requirements	0	0	Yes
Table 8B	Lot Frontage	40.0 m	126.3 m	Yes
Table 8B	Lot Area	0.8 ha	2.0 ha	Yes
Table 8B	Lot Coverage Maximum	35.00%	4.70%	Yes
Table 8B	Front Yard Setback	9.0 m	12.0 m	Yes
Table 8B	Rear Yard Setback	12.0 m	100.4 m	Yes
Table 8B	Side Yard Setback – not abutting a Residential Zone	3.0 m	31.8 m	Yes
Table 8B	Side Yard Setback – Abutting a Residential Zone	9.0 m	51.6 m	Yes
Table 8B	Building Height – Office Uses	N/A	Unknown	Yes
Table 8B	Landscape Open Space	5.00%	15.46% (3,092 m ²)	No
Table 8B	Minimum Landscape Buffer – Abutting a Streetline	4.5 m	4.5 m	No
Table 8B	Minimum Landscape Buffer – Abutting a Residential Zone	3.0 m	3.0 m	No

PARKING SCHEDULE

Type of Parking	Typical Dimension	Existing	Proposed	Total
Vehicle	2.7m x 5.0m	64	-19	47
Barrier-Free	4.6m x 5.8m	1	-	1
Trailer	4.5m x 18.0m	0	+78	78



KEY PLAN N.T.S.

No.	DATE:	REVISIONS:
1.	11/08/25	---
2.	15/08/25	Titleblock & engineering base layer revisions

CLIENT: AR LAND HOLDINGS
8465 BOSTON CHURCH ROAD, MILTON
TOWN OF MILTON
SITE ADDRESS: 8465 BOSTON CHURCH ROAD
PART OF LOT 2, CONCESSION 4 (ESQUESGIN), TOWN OF MILTON, REGIONAL MUNICIPALITY OF HALTON



162 Guelph Street, Suite 209
Georgetown, ON L7G 5X7

TITLE: SITE PLAN

SCALE: 1:450
DATE: AUGUST 2025
DRAWN: M.M.
CHECKED: R.R.
PROJECT No: XXXX
DRAWING No:

1.3 Study Purpose and Scope

The purpose of the study is to evaluate the transportation-related impacts of the proposed development on the study road network and to recommend or confirm any required mitigation measures, if warranted. This TIS is in support of a Site Plan Application (SPA) and a Zoning By-law Amendment (ZBA) application.

The study reviews the following main aspects of the proposed development from a transportation engineering perspective:

- Impacts of development traffic on the study road network through analyzing baseline and baseline with site generated trips traffic operations;
- Need for external roadway improvements to mitigate traffic impacts;
- Adequacy of the development plan to allow for anticipated vehicle servicing internally;
- Safety requirements of the proposed site access; and;

The study has been completed in accordance with Halton Regions (Region) "Traffic Impact Study Guidelines (January 2023)".

Appendix A includes the Terms of Reference for the study, which was confirmed with Town and Region staff through correspondence.

As confirmed in the Terms of Reference, this Transportation Impact Study considers the following study intersections:

- Boston Church Road and Lawson Road
- Boston Church Road and James Snow Parkway North
- Lawson Road and Esquesing Line
- Boston Church Road and Site Access

For the purposes of this study, Region staff has approved a reduced scope TIS based on the number of trips expected to be generated from the development. In this TIS report only the existing base year of 2025 and the base year plus site generated traffic were analyzed.

2.0 Existing Conditions

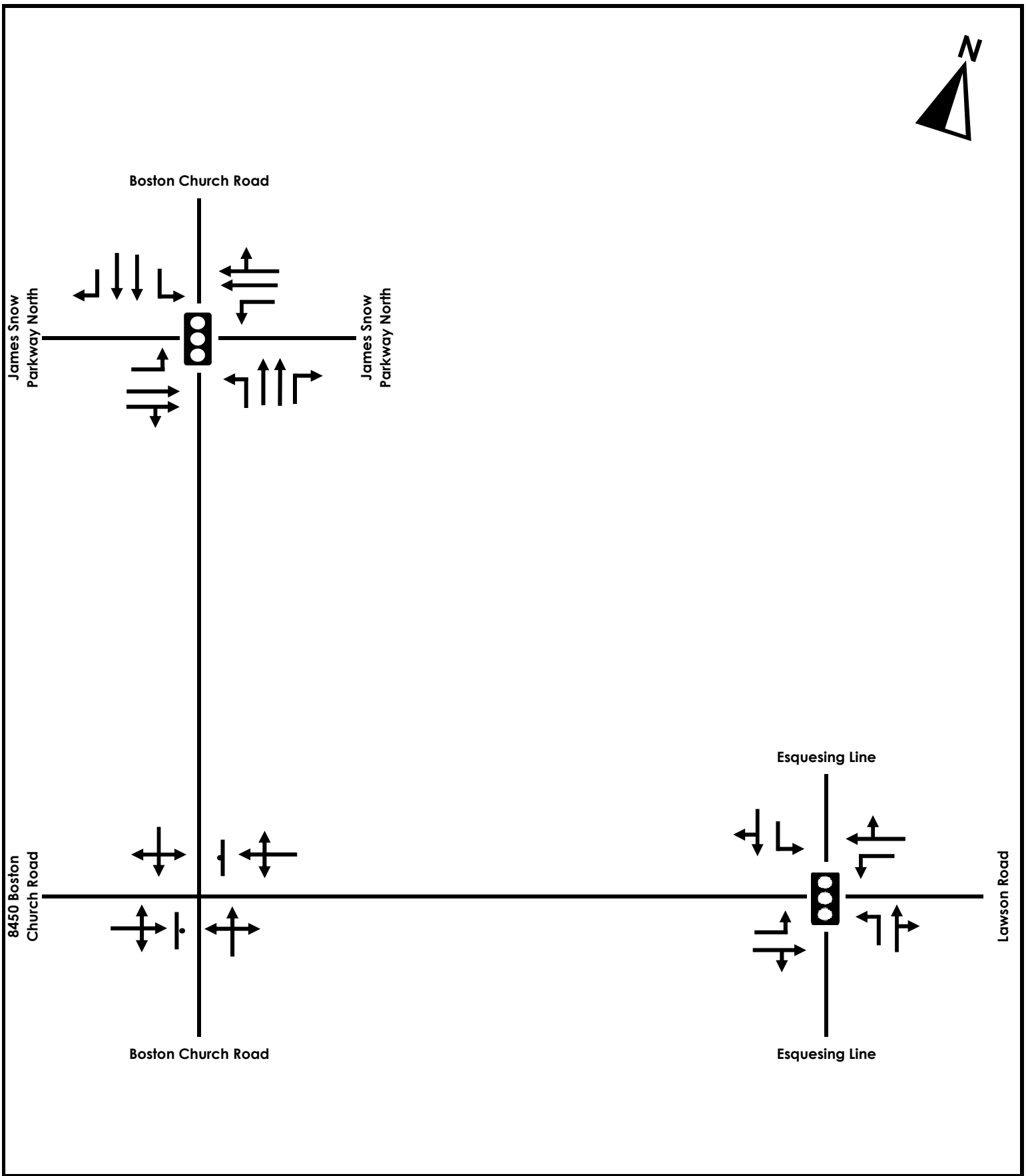
This section outlines the current conditions of the transportation network in the vicinity of the site. Details of the study road network, including traffic controls, lane configurations, speed limits, transit routes and stops, active transportation infrastructure and other relevant transportation elements are identified. The existing traffic operations are also summarized.

2.1 Study Road Network

The study road network consists of the existing road network near the site, which includes the study intersections and the adjoining roadway segments. **Table 1** delineates the study roadways. **Figure 3** illustrates the study road network, including the lane configurations and intersection control at the study intersections.

Table 1: Study Roadways

Feature	Roadways			
	James Snow Parkway North	Esquesing Line	Lawson Road	Boston Church Road
Direction	Two-way (East-West)	Two-way (North-South)	Two-way (East-West)	Two-way (North-South)
Span	Dublin Line to Britannia Road	Steeles Avenue East to 5 Side Road	Boston Church Road to Steeles Avenue East	5 Side Road to Esquesing Line
Classification	Major Arterial	Collector	Collector	Collector
Jurisdiction	Halton Region	Town of Milton	Town of Milton	Town of Milton
Speed Limit	70 km/h (north of Steeles Ave E) 60 km/h (south of Steeles Ave E to Main Street E) 70 km/h (south of Main Street E to Britannia Road)	60 km/h	60 km/h	60 km/h
Number of travel lanes	Four	Two	Two	Two
Median type	Concrete Median	None	None	None
Active Transportation	3.0 m Multi-Use Path (south side)	None	1.5m Sidewalk (south side until Lawson Pond)	1.5m Sidewalk (west side until James Snow Parkway)



Legend

• Stop Bar

8465 Boston Church Road

Existing Traffic Controls



Figure 3

Project No. 2878-7432
Date, September 2025
Analyst, Shaira Ahmed

2.2 Transportation Data

A variety of transportation data was obtained and used to support the analysis in this study. **Table 2** summarizes the study intersections, date of data collection and signal timing plans, and the source of the information. Traffic data was collected during the hours from 6:00 a.m. to 9:00 a.m. and 4:00 p.m. to 7:00 p.m.

Table 2: Traffic Data

Intersection	TMC Date	Source	Timing Plan Date	Source
Boston Church Road and Lawson Road/Private Access	Thursday April 24, 2025	Spectrum	n/a	n/a
Boston Church Road and James Snow Parkway North			August 20, 2020	Region
Esquesing Line and Lawson Road			January 11, 2015	Town

Appendix B contains all transportation data used in support of this study.

2.3 Traffic Modelling and Assumptions

Unless otherwise noted, the existing traffic conditions on the study road network were modelled in Synchro 11 based on "Highway Capacity Manual (HCM)" methodology and using the default Synchro parameters. Roadway geometrics were modelled based on the existing study road network description outlined in **Section 2.1**.

The traffic volumes applied to the existing conditions model are the volumes established in **Section 2.4**, based on the turning movement count survey data. This survey data was also applied to the model for the heavy vehicle percentages and peak hour factors as calculated for each intersection during each time period. **Table 3** outlines the calculated peak hour factors at each intersection during each peak hour.

Table 3: Peak Hour Factors

Intersection	Peak Hour	Peak Hour Factor
Boston Church Road and Lawson Road/Private Access	A.M. 7:30 a.m. to 8:30 a.m.	0.82
	P.M. 4:15 p.m. – 5:15 p.m.	0.56
Boston Church Road and James Snow Parkway North	A.M. 7:45 a.m. to 8:45 a.m.	0.91
	P.M. 4:00 p.m. – 5:00 p.m.	0.92
Esquesing Line and Lawson Road	A.M. 7:45 a.m. to 8:45 a.m.	0.89
	P.M. 4:15 p.m. – 5:15 p.m.	0.92

The signal timing plans identified in **Section 2.2** were incorporated into the model for the signalized study intersections, while stop control was applied in the model to the remaining study intersections.

The assessment of the study intersections is based on the “Highway Capacity Manual (HCM)” methodology, which prescribes a method for estimating the Level of Service, control delay, and volume-to-capacity of an intersection along with the approaches and movements of the intersection. The Level of Service (LOS) metric provides a general performance measure of the quality of the service from a driver’s perspective and ranges a letter from “A” to “F”; “A” representing best performance and “F” representing worst performance. **Appendix C** contains the Level of Service definitions. Control delay is the additional time added per vehicle as a result of the intersection and its associated control (ie. Traffic Light / Stop Control) compared to the average speed on the adjoining roadway segments. Finally, volume-to-capacity ratio indicates the fraction of the capacity for a particular movement used by traffic volumes at an intersection.

Additionally, queuing was analyzed in this study using SimTraffic, a microsimulation tool within the Synchro 11 software. The 95th percentile queue length metric, which represents the 95th percentile queue length of the peak hour traffic simulated in SimTraffic, were considered in this study for the auxiliary turn storage lanes.

2.4 Intersection Operations

Table 4 outlines the 2025 existing baseline conditions for traffic operations at study intersections. Synchro 11 was used to determine intersection operations the study intersections. **Figure 4** illustrates the existing conditions for 2025 traffic volumes used in the operational analysis. **Appendix D** contains the detailed capacity analysis worksheets.

Table 4: 2025 Existing Conditions Traffic Operations

Intersection (Control)	Performance Metrics						
	Movement	LOS ¹		Delay (s)		v/c ratio ²	
		AM	PM	AM	PM	AM	PM
Boston Church Road and Lawson Road (AWSC)	Overall	B	B	10.4	12.6	0.07	0.25
	EBLTR	B	B	10.4	12.6	0.01	0.25
	WBLTR	A	B	9.4	10.6	0.07	0.21
	NBLTR	-	A	0.0	1.1	0.00	0.00
	SBLTR	A	A	5.2	4.5	0.05	0.06
Boston Church Road and James Snow Parkway North (Signalized)	Overall	B	B	12.3	17.6	0.21	0.45
	EBL	A	A	8.1	9.2	0.04	0.22
	EBT	B	B	10.3	11.7	0.17	0.20
	EBTR	B	B	10.3	11.7	0.17	0.20
	WBL	A	A	7.8	8.6	0.03	0.05
	WBT	A	B	10.0	18.0	0.15	0.45
	WBTR	A	B	10.0	18.0	0.15	0.45
	NBL	C	C	34.6	34.8	0.21	0.29
	NBT	A	C	0.0	27.0	0.01	0.12
	NBTR	A	C	0.0	27.0	0.01	0.12
	SBL	C	C	32.0	31.3	0.09	0.11
	SBT	B	C	15.0	26.3	0.21	0.13
	SBTR	B	C	15.0	26.3	0.21	0.13

Intersection (Control)	Performance Metrics						
	Movement	LOS ¹		Delay (s)		v/c ratio ²	
		AM	PM	AM	PM	AM	PM
Esquesing Line and Lawson Road (Signalized)	Overall	A	A	5.1	8.9	0.32	0.49
	EBL	B	B	16.0	17.8	0.00	0.16
	EBTR	B	B	11.0	10.1	0.18	0.49
	WBL	B	B	15.8	16.0	0.01	0.04
	WBTR	B	A	13.7	8.8	0.15	0.29
	NBL	A	A	4.5	6.6	0.10	0.11
	NBTR	A	A	3.7	8.1	0.14	0.38
	SBL	A	A	4.2	6.6	0.08	0.11
	SBTR	A	A	4.5	8.6	0.32	0.44

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro 11). The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach. Critical LOS values are based on average delay per vehicle, on individual movements exceeding LOS D.

Note 2: All v/c ratios above critical thresholds are bolded, all v/c ratios greater than 1.00 are bolded with red text. The critical threshold for intersections is 0.85 for shared/through movements and 0.95 for exclusive turning movements per Halton Region Guidelines.

The metrics summarized above indicate that the study intersections operate at a LOS "B" or better in the weekday a.m. and p.m. peak hours. The maximum volume-to-capacity (v/c) ratio of 0.49 was observed at Esquesing Line and Lawson Road for the eastbound through movement in the weekday p.m. peak hour. These metrics indicate that the study intersections are operating acceptably and have reserve capacity for increases in traffic volumes.

Finally, as outlined in **Section 2.4**, SimTraffic was used to conduct a queuing assessment and estimate 95th percentile queues within the study road network. The a.m. and p.m. peak hour 95th percentile queues were compared against the auxiliary turn storage lane lengths at the study intersections to understand if there is at least the potential for occasional queuing exceedances.

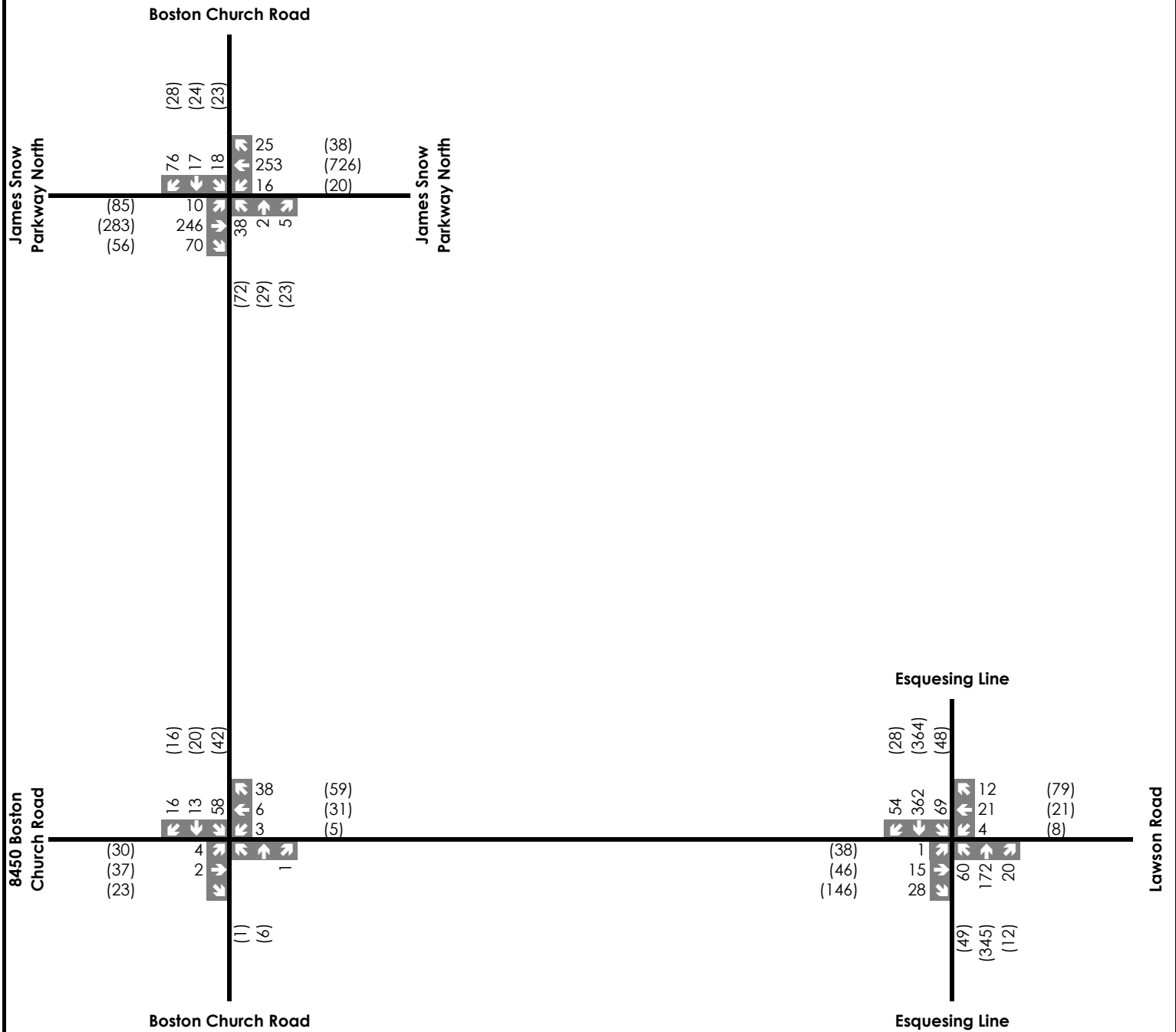
Queuing **Table 5** outlines the results of the 2025 existing conditions queuing assessment.

However, no queuing exceedance of the auxiliary turn storage lanes were recorded in this assessment. Therefore, queuing on the study road network is not expected to result in notable operational impacts.

Table 5: 2025 Existing Conditions Queuing Assessment

Intersection	Performance Metrics			
	Movement	95 th Percentile Queue Length (m)		Auxiliary Lane Storage Length (m)
		AM	PM	
Boston Church Road and James Snow Parkway North (Signalized)	EBL	19.	19.8	70
	WBL	10.3	12	70
	NBL	23.4	26.8	58
	SBL	13.2	14.6	60
Esquesing Line and Lawson Road (Signalized)	EBL	1.2	18.7	24
	WBL	5.6	7.6	41
	NBL	20.9	18.4	44
	SBL	14.9	21.6	33

Note 1: [x] denotes queuing exceedance.



Legend

xx A.M. Peak Hour Traffic Volumes
(xx) P.M. Peak Hour Traffic Volumes

8465 Boston Church Road

2025 Existing Baseline Conditions Traffic Volumes



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CONSULTING ENGINEERS

Figure 4

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Date, September 2025
Analyst, Shaira Ahmed

3.0 Site Generated Traffic

The proposed development will result in additional turning movements at the study intersections. Therefore, this section describes the trip forecasting methodology and results of this forecast for the development proposal.

The site generated traffic forecasting methodology for this study consists of two steps. The first step, Trip Generation, projects the number of trips that originate or are destined for the proposed development, while the second step, Trip Distribution and Assignment, assigns trips to the study road network based on the expected distribution of trips to catchment areas and expected shortest paths for trips destined for particular locations.

3.1 Trip Generation

The client provided the projected vehicles in and out of the site during peak hours in the morning and afternoon. The forecasted trip generation is 20-25 entries and exits in during a.m. and p.m. peak. This sums up to 40-50 two-way trips during the a.m. peak period and 40-50 two-way trips during the p.m. peak period. For this report 25, the maximum number of one-way trips expected for each peak period was used in the analysis to show the worst-case scenario.

3.2 Trip Distribution and Assignment

The trips generated by the proposed development were distributed to the study road network using 2022 Transportation Tomorrow Survey (TTS) data. Excerpts from the TTS query have been included in **Appendix E**.

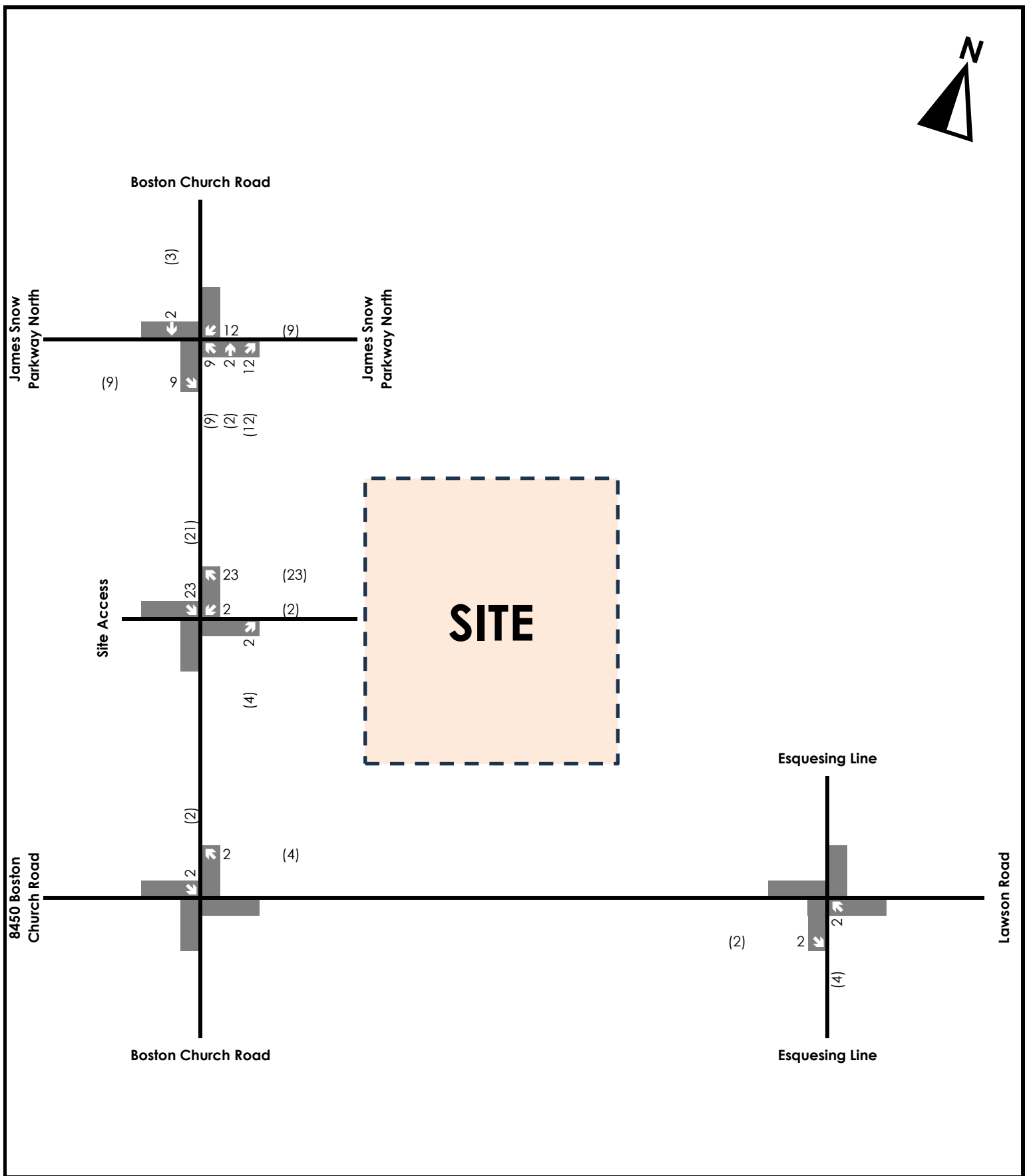
The trips generated by the proposed development were distributed to the network below.

Table 6: Trip Distribution

Distribution	A.M.		P.M.	
	Inbound	Outbound	Inbound	Outbound
Northwest	2%	2%	0%	2%
North	5%	4%	0%	4%
Northeast	9%	14%	25%	14%
East	24%	23%	3%	23%
Southeast	3%	3%	0%	3%
South	23%	23%	54%	23%
Southwest	3%	23%	18%	23%
West	2%	8%	0%	8%

These results are based on TTS 2022 survey results during the typical weekday a.m. and p.m. peak periods and are comparable with the existing travel patterns.

Figure 5 and **Figure 6** illustrates the trip assignment and distribution for the development.



Legend

xx A.M. Peak Hour Traffic Volumes
(xx) P.M. Peak Hour Traffic Volumes

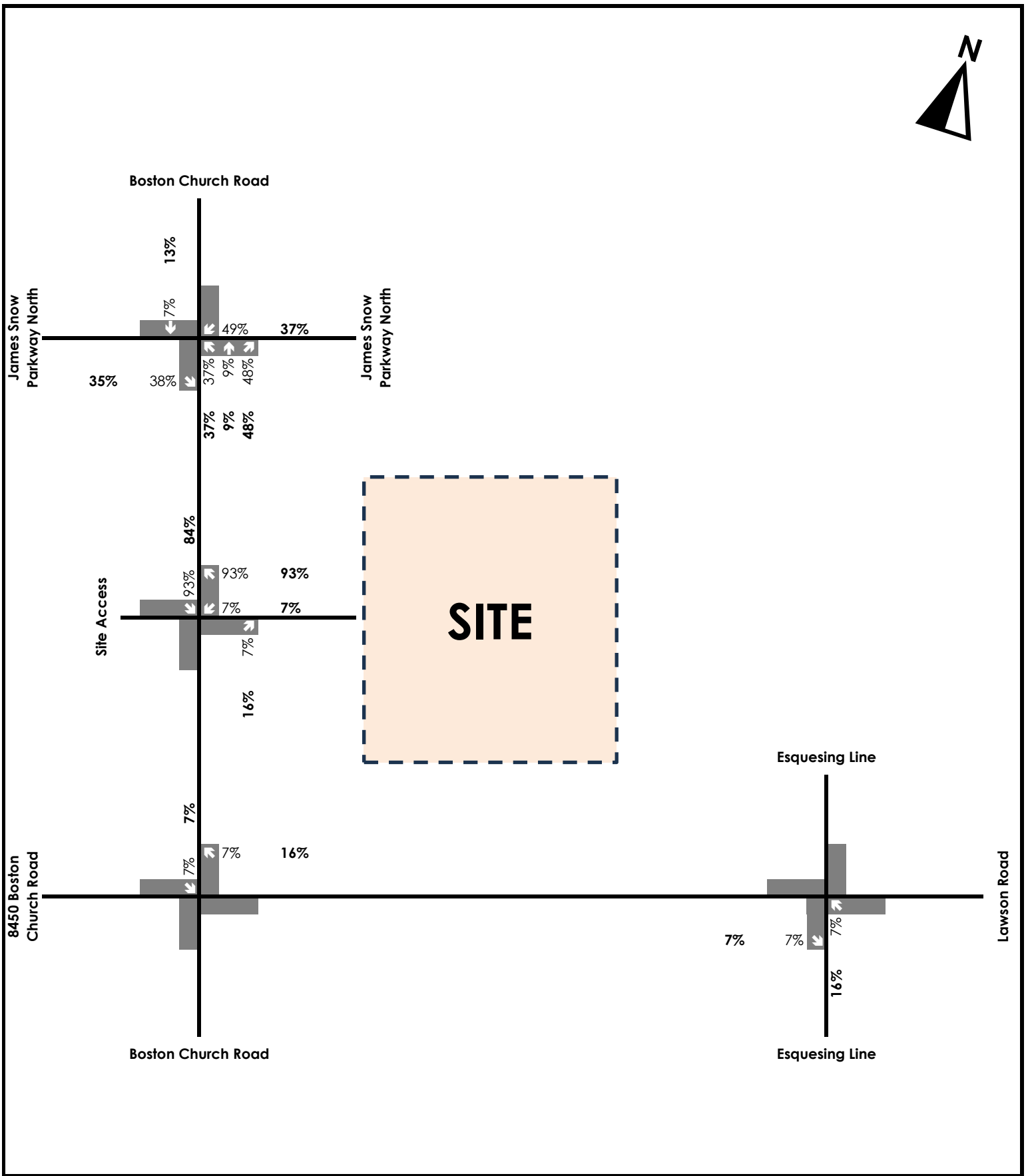
8465 Boston Church Road

Trip Assignment



Figure 5

Project No. 2878-7432
Date, September 2025
Analyst, Shaira Ahmed



Legend

- xx A.M. Peak Hour Traffic Volumes
- xx P.M. Peak Hour Traffic Volumes

8465 Boston Church Road

Trip Distribution



CROZIER
CONSULTING ENGINEERS

Figure 6

Project No. 2878-7432
Date, September 2025
Analyst, Shaira Ahmed

4.0 Baseline Conditions + Site Generated Trips

This section will summarize the baseline conditions with the site generated trips as confirmed in the TOR with the Town and Region.

This analysis will consist of the following components:

- Existing traffic volumes.
- Proposed development site generated traffic volumes.

4.1 Intersection Operations

Table 7 outlines the baseline conditions with the site generated trips for the study intersections. Synchro 11 was used to determine intersection operations at both the signalized and unsignalized study intersections. **Figure 7** illustrates the total traffic operations.

Appendix D contains the detailed capacity analysis worksheets.

Table 7: 2025 Existing Conditions + Site Generated Trips Traffic Operations

Intersection (Control)	Performance Metrics						
	Movement	LOS ¹		Delay (s)		v/c ratio ²	
		AM	PM	AM	PM	AM	PM
Boston Church Road and Lawson Road (AWSC)	Overall	B	B	10.4	12.6	0.07	0.25
	EBLTR	B	B	10.4	12.6	0.01	0.25
	WBLTR	A	B	9.4	10.6	0.07	0.21
	NBLTR	-	A	0.0	1.1	0.00	0.00
	SBLTR	A	A	5.2	4.5	0.05	0.06
Boston Church Road and James Snow Parkway North (Signalized)	Overall	B	B	13.6	18.2	0.25	0.45
	EBL	A	A	8.6	9.6	0.04	0.22
	EBT	B	B	11.6	13.1	0.18	0.21
	EBTR	B	B	11.6	13.1	0.18	0.21
	WBL	A	A	8.2	9.1	0.06	0.08
	WBT	B	B	10.4	18.5	0.16	0.45
	WBTR	B	B	10.4	18.5	0.16	0.45
	NBL	C	D	34.8	35.1	0.25	0.32
	NBT	C	C	20.9	23.3	0.07	0.15
	NBTR	C	C	20.9	23.3	0.07	0.15
	SBL	C	C	31.2	30.8	0.09	0.11
	SBT	B	C	15.6	27.4	0.22	0.14
	SBTR	B	C	15.6	27.4	0.22	0.14
Esquesing Line and Lawson Road (Signalized)	Overall	A	A	5.1	8.9	0.32	0.49
	EBL	B	B	16.0	17.8	0.00	0.16
	EBTR	B	B	10.8	10.0	0.19	0.49
	WBL	B	B	15.8	16.0	0.01	0.04
	WBTR	B	A	13.7	8.8	0.15	0.29
	NBL	A	A	4.5	6.8	0.10	0.12
	NBTR	A	A	3.7	8.1	0.14	0.38
	SBL	A	A	4.2	6.7	0.08	0.11
	SBTR	A	A	4.5	8.6	0.32	0.44
Boston Church Road and Site Access (Unsignalized)	Overall	A	A	8.7	9.1	0.03	0.07
	WBTR	A	A	8.7	9.1	0.03	0.03
	NBTR	-	-	0.0	0.0	0.03	0.07
	SBLT	A	A	1.6	1.5	0.02	0.02

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro 11). The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach. Critical LOS values are based on average delay per vehicle, on individual movements exceeding LOS D.

Note 2: All v/c ratios above critical thresholds are bolded, all v/c ratios greater than 1.00 are bolded with red text. The critical threshold for intersections is 0.85 for shared/through movements and 0.95 for exclusive turning movements per Halton Region Guidelines.

The metrics summarized above indicate that the study intersections continue to operate at a LOS “B” or better in the weekday a.m. and p.m. peak hours with the addition of site generated traffic. The maximum volume-to-capacity ratio of 0.49 is anticipated at Esquesing Line and Lawson Road for the eastbound through movement in the weekday p.m. peak hour. These metrics indicate that the study intersections are anticipated to operate acceptably and have reserve capacity for increases in traffic volumes.

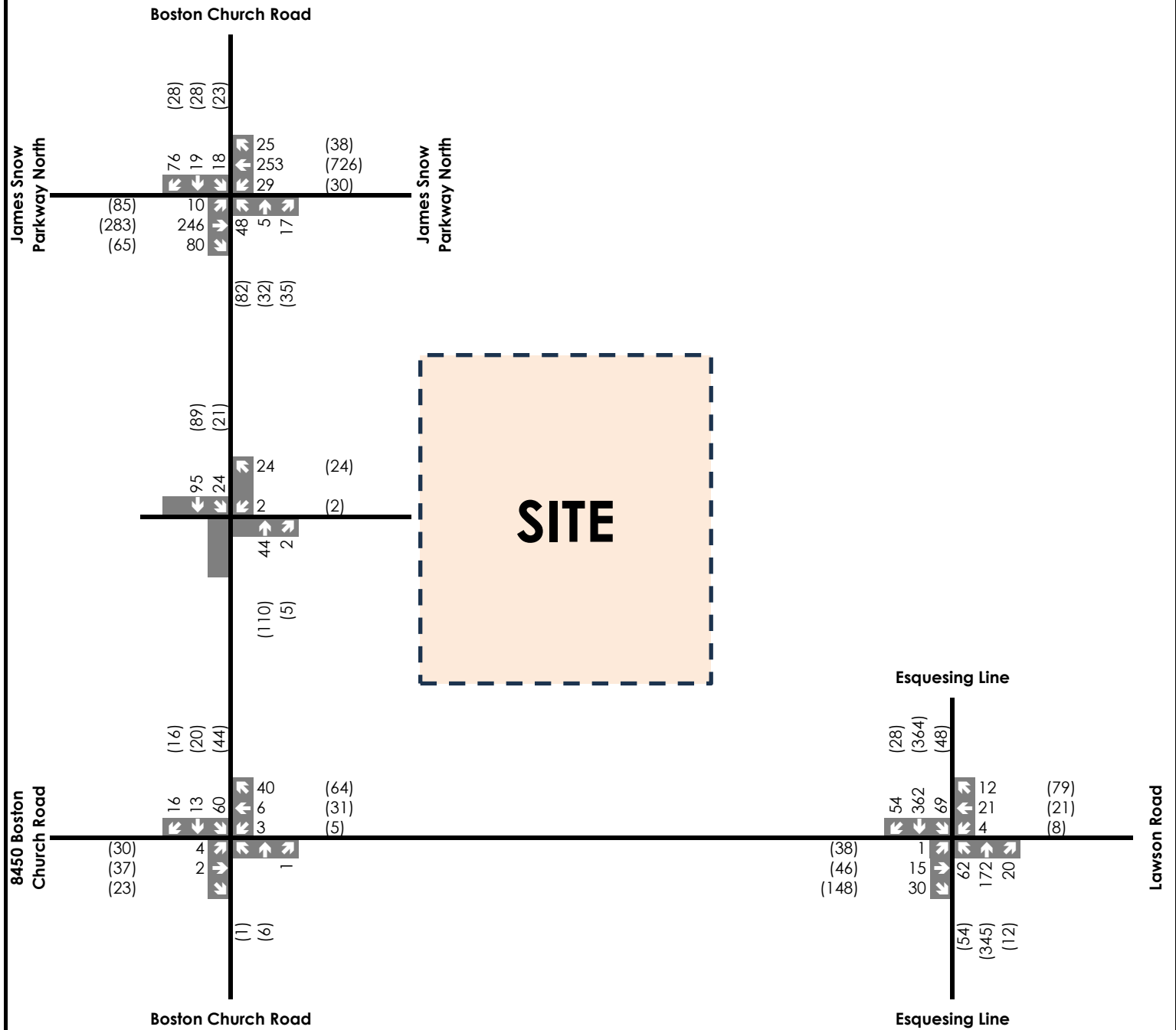
Finally, as outlined in **Section 2.4**, SimTraffic was used to conduct a queuing assessment and estimate 95th percentile queues within the study road network. The a.m. and p.m. peak hour 95th percentile queues were compared against the auxiliary turn storage lane lengths at the study intersections to understand if there is at least the potential for occasional queuing exceedances.

Table 5 outlines the results of the queuing assessment. However, no queuing exceedance of the auxiliary turn storage lanes were recorded in this assessment. Therefore, queuing on the study road network is not expected to result in notable operational impacts.

Table 8: 2025 Existing Conditions + Site Generated Traffic Queuing Assessment

Intersection	Performance Metrics			
	Movement	95 th Percentile Queue Length (m)		Auxiliary Lane Storage Length (m)
		AM	PM	
Boston Church Road and James Snow Parkway North (Signalized)	EBL	16.4	17.7	70
	WBL	15.6	19.7	70
	NBL	29.2	30.2	58
	SBL	11.7	15.4	60
Esquesing Line and Lawson Road (Signalized)	EBL	1.3	15	24
	WBL	5.7	9.1	41
	NBL	18.9	17.7	44
	SBL	16.9	20	33

Note 1: [x] denotes queuing exceedance.



5.0 Site Access Safety Review

The development proposal includes site access along Boston Church Road which will provide transportation servicing to and from the site. This section evaluates the suitability of the site access from a transportation safety perspective and recommends mitigation measures, if warranted. The safety review of the access includes an assessment of whether turning maneuvers can be made safely at the site accesses without issues related to sight lines, intersection spacing, access spacing, or clear throat length.

5.1 Intersection Sight Distance

Section 9.9 of the TAC GDGCR provides intersection sight distance for different intersection control types. The calculated and design sight distances are further summarized in TAC GDGCR Tables 9.9.4, 9.9.6 and 9.9.12 for vehicles turning left from stop, turning right from stop, or turning left from the major road, respectively.

Case B1 (Left Turn from the Minor Road) and Case B2/B3 (Right Turn / Crossing Maneuver from the Minor Road) were used to evaluate sight line adequacy for the site accesses. The WB-20 design vehicle was used for the assessment given that this vehicle is expected to be the most constrained vehicle profile to use the site accesses. **Table 9** outlines the sight distance requirements and compares them to the available sight distance, which was measured using Google Maps. **Appendix F** contains relevant TAC GDGCR excerpts.

Boston Church Road has a posted speed limit of 60 km/h. Accordingly, a design speed of 70 km/h was selected, reflecting the convention of a 10 km/h increase to the posted speed limit for more urbanized roads.

Table 9: Intersection Sight Distance Assessment

Boston Church Road and Site Access Posted Speed = 60 km/h Design Speed = 70 km/h		
Formula	ISD = $0.278 * V_{\text{major}} * t_g$	
Feature	Case B1 – Left Turn	Case B2/B3 – Right Turn
Time Gap ¹	Left Turn: $11.5s + 0.7s = 12.2s$	Right Turn: $10.5s + 0.7s = 11.2s$
Required Sight Distance	237m (looking north)	218m (looking south)
Available Sight Distance	250m + (looking north)	280m + (looking south)

Note 1: To calculate Time Gap, base time gap is required. This default parameter is based on particular turning cases (such as Case B1 and Case B2/B3) and particular design vehicles. Roadways with more than one lane per direction require additions of 0.5s and 0.7s per additional lane for passenger car and truck design vehicles, respectively. For minor street approach upgrades that exceed 3%, additions of 0.2s and 0.1s for Case B1 and Case B2/B3, respectively, are required per percent grade. Refer to Section 9.9 of TAC-GDGCR for additional details.

The available sight distance on Boston Church Road of the site access exceeds the minimum sight distance requirements. Accordingly, the proposed site accesses can be supported from an intersection sight distance perspective.

5.2 Stopping Sight Distance

Boston Church Road is straight and relatively flat adjacent to the site. For level roadways, the stopping sight distance requirements are tabulated in TAC GDGCR Table 2.5.2. The requirements are calculated based on the information for a passenger vehicle and do not explicitly consider design

for truck operations. While trucks require need longer stopping sight distances for a given speed, trucks can generally see further than passenger vehicles due to eye height advantage. As a result, a separate stopping sight distance is not provided. The stopping sight distance assessment is shown in **Table 10**.

Table 10: Stopping Sight Distance Assessment

Boston Church Road and Site Access Posted Speed = 60 km/h Design Speed = 70 km/h	
Formula (TAC GDGCR 2.5.2)	$SSD = 0.278 * V * t + 0.039 * (V^2/a)$
Design Speed (V)	70 km/h
Brake Reaction Time (t)	2.5 s
Deceleration Rate (a)	3.4 m/s ²
Required Stopping Sight Distance	105 m
Available Sight Distance	<300 m (looking south)
Formula (TAC GDGCR 2.5.2)	$SSD = 0.278 * V * t + 0.039 * (V^2/a)$
Design Speed (V)	70 km/h
Brake Reaction Time (t)	2.5 s
Deceleration Rate (a)	3.4 m/s ²
Required Stopping Sight Distance	105 m
Available Sight Distance	<280 m (looking north)

The stopping sight distance exceeds that of the recommendations of a passenger vehicle. Therefore, trucks can safely utilize the proposed accesses. Per TAC GDGCR Table 2.5.2, the minimum stopping sight distance for level roadways with a design speed of 70 km/h is 105 metres for passenger vehicles. Clear visibility in excess is available for the proposed site accesses. Accordingly, there is sufficient stopping sight distance for vehicles approaching from the north and south of the site access. **Appendix F** contains relevant TAC GDGCR excerpts.

5.3 Corner Clearance

Corner clearance is the distance between accesses and stop-controlled or signalized intersections. The required spacing per Figure 8.8.2 in TAC GDGCR is 25 meters for a stop sign at the crossroad. The nearest stop-controlled intersection to the site access is Boston Church Road and Lawson Road. This intersection is 80 meters from the proposed access; therefore, the corner clearance requirements have been met.

6.0 Vehicle Maneuverability Review

An AutoTURN analysis was undertaken to confirm that the expected vehicles including passenger, WB-20 trucks, garbage trucks and emergency vehicles can safely maneuver throughout the site. These diagrams focused on the main paths throughout the development. The vehicle maneuvering diagrams presented in **Appendix G** found no issues with vehicle maneuverability.

7.0 Pavement Marking and Signage Plan

Per discussions with the Town, a Pavement Markings and Signage Plan (PMSP) is required. A PMSP has been prepared and is layered on top of the Site Plan. The PMSP has been submitted separately from the TIS.

8.0 Parking and Loading Review

The following section reviews the adequacy of the parking supply of the proposed development. The parking review includes an assessment of the proposed parking supply of the site against the requirements outlined in the Town of Milton's Comprehensive Zoning By-Law No. 016-2014, Zone M2 – Industrial Zone requirements.

Appendix H contains relevant Zoning By-Law No. 016-2014 excerpts.

8.1 Vehicle Parking Assessment

The Town of Milton's Urban Zoning By-Law 016-2014 Table 5G was used to determine the adequacy of the parking supply for the site.

The parking assessment for the development is shown below.

Table 11: Milton Zoning By-Law Parking Requirements

Land Use	GFA ¹	Parking Rate	Required Parking Spaces	Proposed Parking Spaces (Surplus/Deficit)
Uses permitted by the by-law other than those listed in this Table	1,001.3 m ²	1 parking space per 30m ² of gross floor area	34	47 (+13)

Note 1: The GFA is the sum of the principal building and accessory building.

According to the Zoning By-Law, the site is required to provide 34 standard parking spaces. The draft site plan has proposed 78 trailer parking spaces and 47 standard parking spaces. The site is in accordance with Milton's Urban Zoning By-Law 016-2014.

9.0 Conclusion

This study has assessed the transportation impacts of the proposed development at 8465 Boston Church Road in the Town of Milton. The existing conditions and the potential net impacts of the development proposal on the study road network have been evaluated. In addition, the study has assessed the development proposal for its ability to facilitate access, maneuverability and parking of the expected vehicle servicing within the site.

The analysis contained within this study has resulted in the following key findings:

- Under the 2025 existing conditions scenario:
 - The study intersections all operate at a LOS of “B” or better. The maximum volume-to-capacity (v/c) ratio of 0.49 was observed at Esquesing Line and Lawson Road for the eastbound through movement in the weekday p.m. peak hour. no queuing exceedance of the auxiliary turn storage lanes were recorded in this assessment. Therefore, queuing on the study road network is not expected to result in notable operational impacts.
- The proposed transportation terminal is projected to generate a total of 40-50 two-way auto trips during the weekday a.m. and p.m. peak hour, respectively. The maximum trips generated were used for the analysis.
- Under the 2025 horizon year with the trip generated trips added to the analysis:
 - Traffic operations are forecasted to remain similar compared to the existing road operations. A maximum control delay increment at all intersections and under all horizon years considered is forecast at 18.2 seconds. A maximum v/c of 0.49 is anticipated at Esquesing Line and Lawson Road for the eastbound through movement in the weekday p.m. peak hour.
 - No queuing exceedance of the auxiliary turn storage lanes were recorded in this assessment. Therefore, queuing on the study road network is not expected to result in notable operational impacts.
- Analysis of site access safety components associated with the proposed development indicate the following:
 - The proposed intersection sight distance exceeds the requirements along Boston Church Road and the proposed Site Access.
 - The available stopping sight distance at the proposed site access exceeds the minimum sight distance requirements set out in the TAC GDGCR.
 - The corner clearance requirements have been met for both proposed site accesses.
- There are no expected vehicle maneuverability constraints within the subject site for fire trucks, waste collection vehicles or loading vehicles.
- The site has provided sufficient vehicle parking spaces per Milton's Urban Zoning By-Law 016-2014 is proposing 78 trailer parking spaces and 47 standard vehicular parking spaces.

In conclusion, the proposed transportation terminal can be supported from a traffic operations and safety perspective.

Respectfully submitted by,

C.F. CROZIER & ASSOCIATES INC.



Shaira Ahmed, EIT
Engineering Intern, Transportation

C.F. CROZIER & ASSOCIATES INC.



Ian Lindley, M.A.Sc., P.Eng
Project Engineer, Transportation

SA/il

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Road\Reports\Transportation\2025.09.23_(2878-7432) 6465 Boston Church Road TIS.docx

Appendix A

Terms of Reference Correspondence

Shaira Ahmed

From: Chris.Toews@milton.ca
Sent: May 6, 2025 9:59 AM
To: Loro, Darren; Shaira Ahmed
Cc: Ian Lindley
Subject: RE: Terms of Reference: 8465 Boston Church Road (CFCA# 2878-7432)

Good morning Shaira,

Sorry for the delay getting back to you. See below comments from Town of Milton Transportation Planning staff **in red**.

Let me know if you have any questions.

Kind regards,
Chris



Chris Toews

Transportation Planning Technologist
150 Mary Street., Milton ON, L9T 6Z5
905-878-7252 ext. 2502
www.milton.ca

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From: Loro, Darren <Darren.Loro@halton.ca>
Sent: Tuesday, May 6, 2025 9:56 AM
To: 'Shaira Ahmed' <sahmed@cfcrozier.ca>
Cc: Ian Lindley <ilindley@cfcrozier.ca>; Chris Toews <Chris.Toews@milton.ca>
Subject: RE: Terms of Reference: 8465 Boston Church Road (CFCA# 2878-7432)

Hi Shaira,

Thanks for providing the preliminary trip generation forecasts!

Chris at the Town and I have discussed, and we agree that a scoped TIS with a reduced-scope capacity analysis is acceptable given the scale and context of the proposed development.

Halton Region's comments on the proposed TIS Terms of Reference are provided below in **blue**. Let us know if you have any questions or want to discuss further 😊

Cheers,
Darren

From: Shaira Ahmed <sahmed@cfcrozier.ca>
Sent: Friday, May 2, 2025 9:17 AM
To: Loro, Darren <Darren.Loro@halton.ca>
Cc: Ian Lindley <ilindley@cfcrozier.ca>; Chris.Toews@milton.ca
Subject: RE: Terms of Reference: 8465 Boston Church Road (CFCA# 2878-7432)

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Good morning Darren,

I'm doing good, hope all is well with yourself!

Apologies for the delay in providing the trip generation forecasts. As of right now, we are projecting an average of 20-25 entries and exits during the weekday a.m. and p.m. peak periods.

Please let us know if any more information is required.

Regards,
Shaira

Shaira Ahmed
Engineering Intern, Transportation
Office: 905.693.4706
Collingwood | Milton | Toronto | Bradford | Guelph

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[Read about our national award here.](#)



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From: Loro, Darren <Darren.Loro@halton.ca>
Sent: April 24, 2025 5:44 PM
To: Shaira Ahmed <sahmed@cfcrozier.ca>
Cc: Ian Lindley <ilindley@cfcrozier.ca>; Chris.Toews@milton.ca
Subject: RE: Terms of Reference: 8465 Boston Church Road (CFCA# 2878-7432)

Hi Shaira,

Hope you're doing well!

Thank you for your patience while I have been reviewing your proposed TIS TOR and drafting comments. Before we finalize our comments, could you please share the preliminary trip generation forecasts for the proposed development? This will help inform certain study components such as study intersections and horizon years.

Appreciate it!

Cheers,
Darren

Darren Loro, C.E.T.

Project Manager I – Transportation Development Review

Development Services

Public Works

Halton Region

905-825-6000, ext. 2694 | 1-866-442-5866



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From: Shaira Ahmed <sahmed@cfcrozier.ca>

Sent: Wednesday, April 16, 2025 2:10 PM

To: Loro, Darren <Darren.Loro@halton.ca>; Chris.Toews@milton.ca

Cc: Ian Lindley <ilindley@cfcrozier.ca>

Subject: Terms of Reference: 8465 Boston Church Road (CFCA# 2878-7432)

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Hello,

C.F. Crozier and Associates (Crozier) has been retained to prepare a Transportation Impact Study (TIS) with the goal of re-zoning the site from Institutional (I-B) to Industrial (M2). The intended use after rezoning would be a transportation terminal, a site plan has not been prepared at this time.

To facilitate the development, access to the Site has been assumed along Boston Church Road and Lawson Road.

The assessment will be prepared in accordance with the Town of Milton's *Terms or Reference: Traffic Impact Study Guidelines (January 2023)* and Halton Region's *Transportation Impact Study Guidelines (January 2015)*. On this basis we propose the following Terms of Reference for the Transportation Impact Study (TIS): [The Region's TIS Guidelines are available online at: https://www.halton.ca/Repository/Transportation-Impact-Study-Guidelines](https://www.halton.ca/Repository/Transportation-Impact-Study-Guidelines)

Study Intersections

- We propose the following study intersections:
 - Boston Church Road and Lawson Road
 - Boston Church Road and James Snow Parkway North
 - Lawson Road and Esquesing Line
 - ~~James Snow Parkway North and Esquesing Line~~ this intersection can be removed from the study scope as truck turning movements would not be expected at this intersection given that the segment of Esquesing Line between James Snow Parkway and Lawson Road is a "No Heavy Trucks" route (i.e. trucks would only be expected as through traffic along James Snow Parkway at this intersection).
 - Boston Church Road and Site Access

- Lawson Road and Site Access

Please confirm the above noted intersections are sufficient for the study.

Existing Conditions

- We will consult specialty traffic counting firms we typically work with to obtain traffic data for the intersections listed above conducted on a typical mid-week weekday (i.e. a typical Tuesday, Wednesday or Thursday) unless the Town of Milton (Town) has data for these intersections. [Acceptable.](#)
- We will request signal timing plans from the Town. Please provide the information of who to contact at the Town for these plans [Signal timing plans for the Regional study intersection can be requested at \[accesshalton@halton.ca\]\(mailto:accesshalton@halton.ca\).](#)
- We will analyze the weekday a.m. and p.m. peak periods; 7:00 a.m. to 10:00 a.m. & 4:00 p.m. to 7:00 p.m.; reflective of the typical peak periods. [Acceptable.](#)
- We will analyze the existing vehicle traffic conditions based on peak hour traffic counts using Synchro, LOS (based on control delays), and maximum volume-to-capacity ratios, and 95th percentile queues from Sim Traffic will also be outlined. [All traffic operations analysis must conform to the Region's TIS Guidelines. This includes documenting all analysis methodologies and highlighting or bolding all critical volume-to-capacity ratios or 95th percentile queue lengths results that exceed the thresholds outlined in the TIS Guidelines.](#)

Study Horizons

- We will analyze the current year (2025) and 5 years after full build out (2030), consistent with the Town and Region TIS requirements. [Given the scale and context of the proposed truck terminal land use, analysis of "baseline" conditions" and "baseline-plus-site-traffic conditions" will only be required \(i.e. no future background analysis for a future horizon year\).](#)

Growth Rates

We kindly request a recommended growth rate applicable to traffic volumes in the study area, to sufficiently reflect future conditions in the horizon years. If a growth rate is not available, an industry standard of 2% is suggested to forecast future traffic growth at the intersections of the study. **Please confirm if this is acceptable.** [Not applicable \(see comments above\).](#)

Background Developments

Please confirm if any background development should be included in the analysis. If there are developments that need to be considered, please provide the associated transportation impact studies that should be included in our analysis. [Not applicable \(see comments above\).](#)

Future Background Conditions

- We will forecast the 2030 future background vehicle traffic volumes based on the above growth rates (and any background developments requested by the Town and Region). [Not applicable \(see comments above\).](#)
- Future background vehicle traffic volumes will be analyzed based on Synchro, LOS (based on control delays) and maximum volume-to-capacity ratios. Queue lengths will be evaluated based on Sim Traffic results. . **Please confirm if this is acceptable.** [Not applicable \(see comments above\).](#)

Future Total Conditions ("Baseline-plus-site-traffic conditions")

- Trip Distribution will be based on the 2016 Transportation Tomorrow Survey (TTS) data and/or existing travel patterns. [Acceptable, as long as all trip distribution assumptions are clearly documented in the TIS with supporting data appended.](#)
- Trip Generation will be based on ITE Trip Generation Manual, 11th edition using the following Land Use Category's (LUC):
- LUC 030 - Intermodal Truck Terminal [Acceptable, as long as all trip generation assumptions are clearly documented in the TIS with supporting data appended.](#)

- Future total vehicle traffic volumes will be analyzed based on Synchro, LOS (based on control delays) and maximum volume-to-capacity ratios. Queue lengths will be evaluated based on Sim Traffic results. **Please confirm if this is acceptable.** [See comment below.](#)
- Future background and future total conditions will be compared to identify if capacity and queuing issues are forecasted and if site-specific mitigation measures are required.
- [All traffic operations analysis must conform to the Region's TIS Guidelines. This includes documenting all analysis methodologies and highlighting or bolding all critical volume-to-capacity ratios or 95th percentile queue lengths results that exceed the thresholds outlined in the TIS Guidelines.](#)
- [The TIS must confirm that the existing intersection geometrics at the intersection of James Snow Parkway and Boston Church Road can accommodate the truck traffic generated by the proposed development \(i.e. from a traffic operations and queuing perspective\). If required, recommendations for intersection modifications to accommodate truck traffic must be clearly analyzed and presented in the TIS.](#)

Vehicle Maneuvering and Turning Plans

- We will use AutoTurn to review on-site circulation for the following vehicles:
 - Passenger Cars (P)
 - WB-20
 - Waste Collection (Halton FL GT)
 - Halton Pumper Fire Truck
- Provide design recommendations for the Site Plan where needed to ensure sufficient space for vehicle turning radii, pedestrian connections, and site circulation. [Town to confirm.](#)

Traffic Safety

- The available sight distance and geometry at the site access will be compared to standards set out by the Transportation Associates of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR), Halton Region, and Town of Milton standards. **Please confirm if this is acceptable.** [Town to confirm given that the site accesses do not front the Regional road network.](#)
- **Referencing the TAC manual, please conduct a detailed and comprehensive Site Access Review including, but not limited to, the following:**
 - **Determine if the proposed site access location meets TAC minimum standards for crossing sight distance, stopping sight distance, decision sight distance, turning sight distance, etc.**
 - **Corner clearance from adjacent intersections**
 - **Spacing between adjacent driveways**
 - **Spacing considerations for opposing driveways**
 - **Ensure design conformance of the site access(es) to OPSD standards including width, radii, grades, etc.**
 - **Gap analysis**
 - **Determination whether the proposed site access is feasible from a safety and traffic operations perspective and why**
 - **A list of any potential or required mitigation measures to support the access (if site access determined to be feasible) OR a proposed new site access location(s)**

Pavement Marking and Signage Plan

- We will review the Site Plan and site features to ensure they depict property lines, driveways, fire hydrants, sidewalks, traffic signage and pavement markings [Town to confirm.](#) – **A standalone Pavement Marking and Signage Plan is required. The plan is to include all traffic signage and pavement markings, regulatory and/or custom (i.e., stop signs, stop bars, barrier-free parking signs, parking stall delineation, fire route signs, visitor parking signs, etc.) Please refer to the Ontario Traffic Manual regarding the type and location of signs and pavement markings.**
-

Parking Justification Study (PJS)

Per the Town's zoning by-law parking requirements, the parking required by the site will be assessed. Loading space, barrier free, and bicycle parking requirements will also be analyzed. **Please confirm if this methodology is acceptable or what requirements are needed for the PJS. Town to confirm. – The proposed parking rate should be supported by at least two sources (i.e., any combination of proxy site data, ITE data, and/or first principle data, etc.) If proxy site data is chosen as part of the parking justification, parking utilization survey data should be acquired from sites/developments operating under similar land uses. The study must outline the similarities between the proxy site and the proposed site and why they will generate a similar parking demand. The proxy site must be located in the Town of Milton (where applicable), however Transportation staff would consider proxy sites outside of Milton in the event there were no comparable sites located in Town. Raw survey data must be appended to the report.**

I hope the contents outlined in this email are acceptable.

Should you have any questions or require any further information, please feel free to contact Ian Lindley or myself.

Kind Regards,

Shaira Ahmed

Engineering Intern, Transportation

Office: 905.693.4706

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Appendix B

Transportation Data



Turning Movement Count (2 . BOSTON CHURCH RD & JAMES SNOW PKWY N)

Start Time	N Approach BOSTON CHURCH ROAD						E Approach JAMES SNOW PARKWAY N						S Approach BOSTON CHURCH ROAD						W Approach JAMES SNOW PARKWAY N						Int. Total (15 min)	Int. Total (1 hr)
	Right N-W	Thru N-S	Left N-E	UTurn N-N	Peds N:	Approach Total	Right E-N	Thru E-W	Left E-S	UTurn E-E	Peds E:	Approach Total	Right S-E	Thru S-N	Left S-W	UTurn S-S	Peds S:	Approach Total	Right W-S	Thru W-E	Left W-N	UTurn W-W	Peds W:	Approach Total		
2025-04-24 06:00:00	7	4	0	0	0	11	1	22	7	0	0	30	6	1	5	0	0	12	7	20	4	0	0	31	84	
2025-04-24 06:15:00	11	4	1	0	0	16	3	41	15	0	0	59	7	0	10	0	0	17	8	31	13	0	0	52	144	
2025-04-24 06:30:00	24	4	2	0	0	30	4	33	8	0	0	45	4	3	3	0	0	10	8	43	5	0	0	56	141	
2025-04-24 06:45:00	22	5	1	0	0	28	2	46	7	0	0	55	5	0	4	0	0	9	13	38	7	0	0	58	150	519
2025-04-24 07:00:00	11	4	3	0	0	18	4	36	4	0	0	44	7	1	9	0	0	17	7	35	8	0	0	50	129	564
2025-04-24 07:15:00	14	4	7	0	0	25	5	41	4	0	0	50	4	0	2	0	0	6	18	47	0	0	0	65	146	566
2025-04-24 07:30:00	11	6	5	0	0	22	2	44	8	0	0	54	4	1	4	0	0	9	8	52	4	0	0	64	149	574
2025-04-24 07:45:00	25	2	5	0	0	32	3	68	4	0	0	75	1	1	9	0	0	11	15	65	7	0	0	87	205	629
2025-04-24 08:00:00	16	9	7	0	0	32	7	63	6	0	0	76	1	1	12	0	0	14	17	58	1	0	0	76	198	698
2025-04-24 08:15:00	20	4	5	0	0	29	8	79	3	0	0	90	3	0	10	0	0	13	26	54	2	0	0	82	214	766
2025-04-24 08:30:00	15	2	1	0	0	18	7	43	3	0	0	53	0	0	7	0	0	7	12	69	0	0	0	81	159	776
2025-04-24 08:45:00	19	5	3	0	0	27	9	57	6	0	0	72	2	1	10	0	0	13	13	66	4	0	0	83	195	766
BREAK																										
2025-04-24 16:00:00	5	4	2	0	0	11	14	160	3	0	0	177	6	3	19	0	0	28	16	76	23	0	0	115	331	
2025-04-24 16:15:00	9	5	8	0	0	22	11	178	5	0	0	194	7	21	27	0	0	55	12	67	20	0	0	99	370	
2025-04-24 16:30:00	7	11	8	0	0	26	8	198	4	0	0	210	7	4	15	0	0	26	18	71	30	0	0	119	381	
2025-04-24 16:45:00	7	4	5	0	0	16	5	190	8	0	0	203	3	1	11	0	0	15	10	69	12	0	0	91	325	1407
2025-04-24 17:00:00	3	1	5	0	0	9	7	155	4	0	0	166	2	8	20	0	0	30	13	76	23	0	0	112	317	1393
2025-04-24 17:15:00	8	1	7	0	0	16	11	214	1	1	0	227	4	2	7	0	0	13	15	68	25	0	0	108	364	1387
2025-04-24 17:30:00	8	1	3	0	0	12	4	207	7	0	0	218	2	4	11	0	0	17	18	60	12	0	0	90	337	1343
2025-04-24 17:45:00	9	4	5	0	0	18	9	145	3	0	0	157	3	2	7	0	0	12	9	48	6	0	0	63	250	1268
2025-04-24 18:00:00	3	4	4	0	0	11	5	86	6	0	0	97	4	1	10	0	1	15	8	56	15	0	0	79	202	1153
2025-04-24 18:15:00	2	2	2	0	0	6	3	82	6	0	0	91	2	3	10	0	0	15	5	39	7	0	0	51	163	952
2025-04-24 18:30:00	1	1	5	0	0	7	8	75	3	0	0	86	2	3	8	0	0	13	9	42	12	0	0	63	169	784
2025-04-24 18:45:00	10	1	2	0	0	13	5	94	6	1	0	106	2	3	7	0	0	12	10	36	12	0	0	58	189	723
Grand Total	267	92	96	0	0	455	145	2357	131	2	0	2635	88	64	237	0	1	389	295	1286	252	0	0	1833	5312	-
Approach%	58.7%	20.2%	21.1%	0%		-	5.5%	89.4%	5%	0.1%		-	22.6%	16.5%	60.9%	0%		-	16.1%	70.2%	13.7%	0%		-	-	-
Totals %	5%	1.7%	1.8%	0%		8.6%	2.7%	44.4%	2.5%	0%		49.6%	1.7%	1.2%	4.5%	0%		7.3%	5.6%	24.2%	4.7%	0%		34.5%	-	-
Heavy	3	4	23	0		-	27	204	71	0		-	61	0	101	0		-	118	111	2	0		-	-	-
Heavy %	1.1%	4.3%	24%	0%		-	18.6%	8.7%	54.2%	0%		-	69.3%	0%	42.6%	0%		-	40%	8.6%	0.8%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-



Peak Hour: 07:45 AM - 08:45 AM Weather: Few Clouds (8 °C)

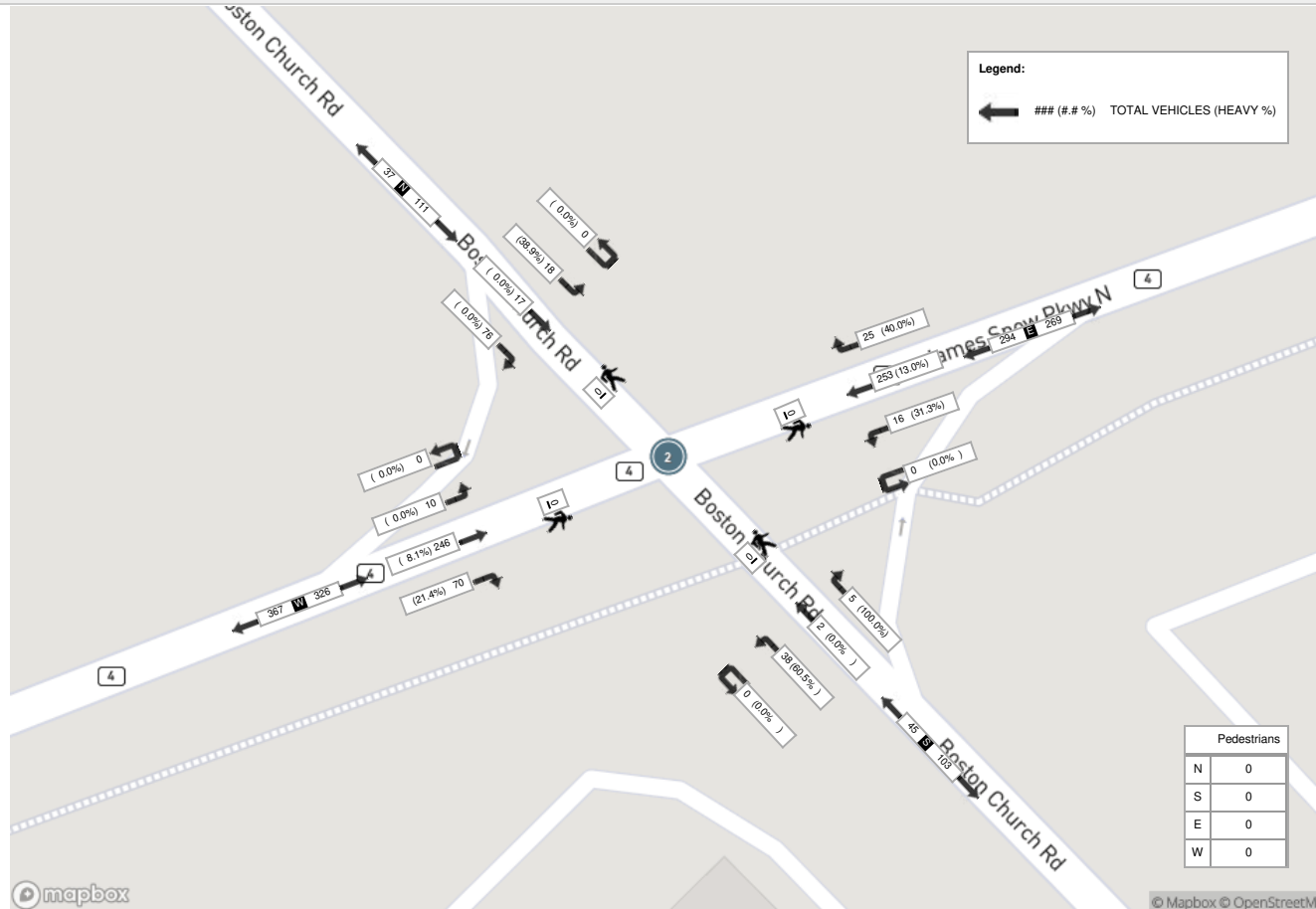
Start Time	N Approach BOSTON CHURCH ROAD						E Approach JAMES SNOW PARKWAY N						S Approach BOSTON CHURCH ROAD						W Approach JAMES SNOW PARKWAY N						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
2025-04-24 07:45:00	25	2	5	0	0	32	3	68	4	0	0	75	1	1	9	0	0	11	15	65	7	0	0	87	205
2025-04-24 08:00:00	16	9	7	0	0	32	7	63	6	0	0	76	1	1	12	0	0	14	17	58	1	0	0	76	198
2025-04-24 08:15:00	20	4	5	0	0	29	8	79	3	0	0	90	3	0	10	0	0	13	26	54	2	0	0	82	214
2025-04-24 08:30:00	15	2	1	0	0	18	7	43	3	0	0	53	0	0	7	0	0	7	12	69	0	0	0	81	159
Grand Total	76	17	18	0	0	111	25	253	16	0	0	294	5	2	38	0	0	45	70	246	10	0	0	326	776
Approach%	68.5%	15.3%	16.2%	0%		-	8.5%	86.1%	5.4%	0%		-	11.1%	4.4%	84.4%	0%		-	21.5%	75.5%	3.1%	0%		-	-
Totals %	9.8%	2.2%	2.3%	0%		14.3%	3.2%	32.6%	2.1%	0%		37.9%	0.6%	0.3%	4.9%	0%		5.8%	9%	31.7%	1.3%	0%		42%	-
PHF	0.76	0.47	0.64	0		0.87	0.78	0.8	0.67	0		0.82	0.42	0.5	0.79	0		0.8	0.67	0.89	0.36	0		0.94	0.91
Heavy	0	0	7	0		7	10	33	5	0		48	5	0	23	0		28	15	20	0	0		35	118
Heavy %	0%	0%	38.9%	0%		6.3%	40%	13%	31.3%	0%		16.3%	100%	0%	60.5%	0%		62.2%	21.4%	8.1%	0%	0%		10.7%	15.2%
Lights	76	17	11	0		104	15	220	11	0		246	0	2	15	0		17	55	226	10	0		291	658
Lights %	100%	100%	61.1%	0%		93.7%	60%	87%	68.8%	0%		83.7%	0%	100%	39.5%	0%		37.8%	78.6%	91.9%	100%	0%		89.3%	84.8%
Single-Unit Trucks	0	0	7	0		7	10	15	4	0		29	0	0	7	0		7	7	11	0	0		18	61
Single-Unit Trucks %	0%	0%	38.9%	0%		6.3%	40%	5.9%	25%	0%		9.9%	0%	0%	18.4%	0%		15.6%	10%	4.5%	0%	0%		5.5%	7.9%
Buses	0	0	0	0		0	0	2	0	0		2	0	0	0	0		0	0	0	0	0		0	2
Buses %	0%	0%	0%	0%		0%	0%	0.8%	0%	0%		0.7%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0.3%
Articulated Trucks	0	0	0	0		0	0	16	1	0		17	5	0	16	0		21	8	9	0	0		17	55
Articulated Trucks %	0%	0%	0%	0%		0%	0%	6.3%	6.3%	0%		5.8%	100%	0%	42.1%	0%		46.7%	11.4%	3.7%	0%	0%		5.2%	7.1%
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%
Pedestrians	-	-	-	-	0	-	-	-	-	0		-	-	-	-	0		-	-	-	-	0		-	-
Pedestrians%	-	-	-	-	0%		-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-



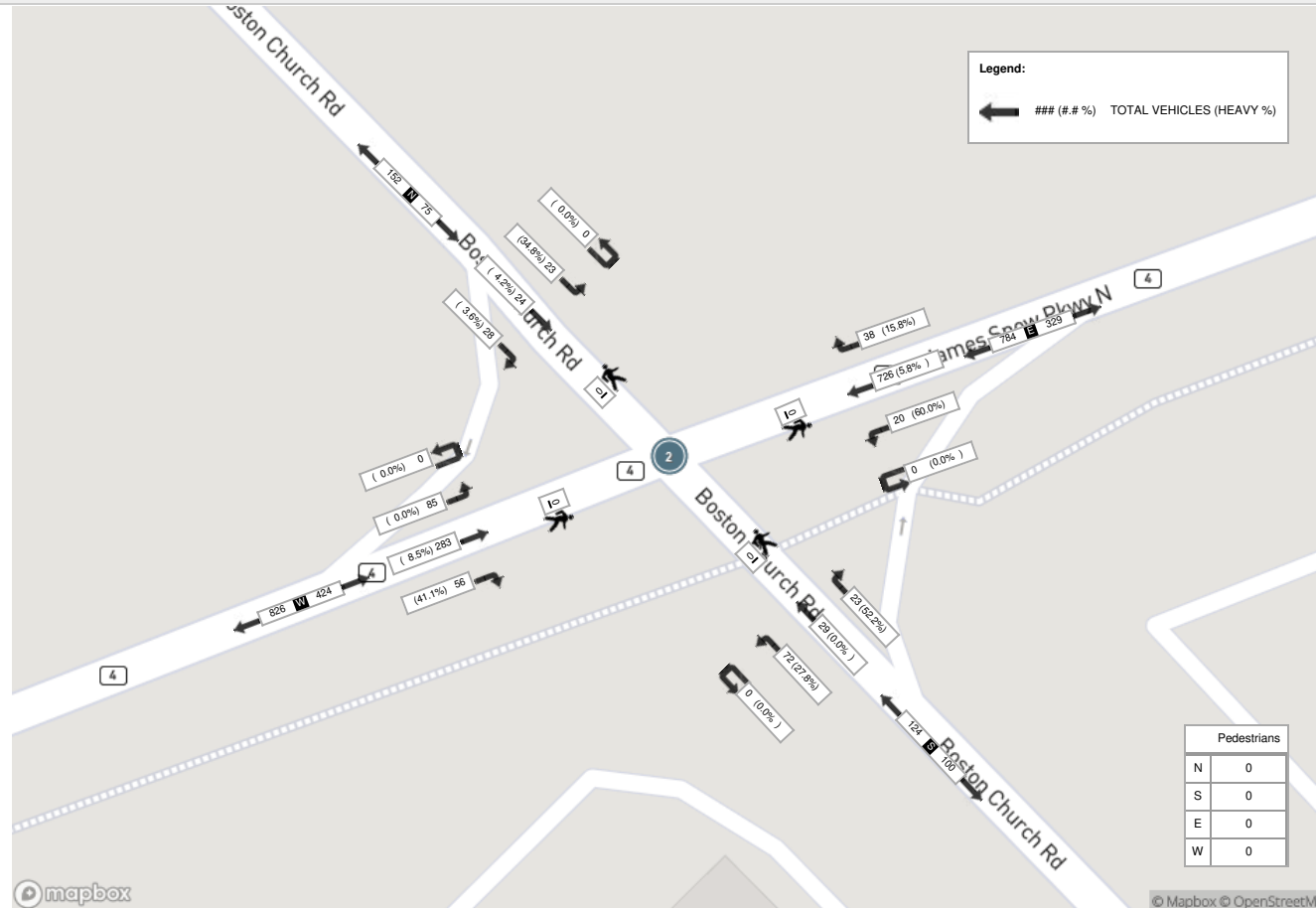
Peak Hour: 04:00 PM - 05:00 PM Weather: Overcast Clouds (24 °C)

Start Time	N Approach BOSTON CHURCH ROAD						E Approach JAMES SNOW PARKWAY N						S Approach BOSTON CHURCH ROAD						W Approach JAMES SNOW PARKWAY N						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
2025-04-24 16:00:00	5	4	2	0	0	11	14	160	3	0	0	177	6	3	19	0	0	28	16	76	23	0	0	115	331
2025-04-24 16:15:00	9	5	8	0	0	22	11	178	5	0	0	194	7	21	27	0	0	55	12	67	20	0	0	99	370
2025-04-24 16:30:00	7	11	8	0	0	26	8	198	4	0	0	210	7	4	15	0	0	26	18	71	30	0	0	119	381
2025-04-24 16:45:00	7	4	5	0	0	16	5	190	8	0	0	203	3	1	11	0	0	15	10	69	12	0	0	91	325
Grand Total	28	24	23	0	0	75	38	726	20	0	0	784	23	29	72	0	0	124	56	283	85	0	0	424	1407
Approach%	37.3%	32%	30.7%	0%		-	4.8%	92.6%	2.6%	0%		-	18.5%	23.4%	58.1%	0%		-	13.2%	66.7%	20%	0%		-	-
Totals %	2%	1.7%	1.6%	0%		5.3%	2.7%	51.6%	1.4%	0%		55.7%	1.6%	2.1%	5.1%	0%		8.8%	4%	20.1%	6%	0%		30.1%	-
PHF	0.78	0.55	0.72	0		0.72	0.68	0.92	0.63	0		0.93	0.82	0.35	0.67	0		0.56	0.78	0.93	0.71	0		0.89	0.92
Heavy	1	1	8	0		10	6	42	12	0		60	12	0	20	0		32	23	24	0	0		47	149
Heavy %	3.6%	4.2%	34.8%	0%		13.3%	15.8%	5.8%	60%	0%		7.7%	52.2%	0%	27.8%	0%		25.8%	41.1%	8.5%	0%	0%		11.1%	10.6%
Lights	26	23	15	0		64	31	684	8	0		723	11	29	52	0		92	33	259	85	0		377	1256
Lights %	92.9%	95.8%	65.2%	0%		85.3%	81.6%	94.2%	40%	0%		92.2%	47.8%	100%	72.2%	0%		74.2%	58.9%	91.5%	100%	0%		88.9%	89.3%
Single-Unit Trucks	1	1	8	0		10	4	17	2	0		23	4	0	8	0		12	6	11	0	0		17	62
Single-Unit Trucks %	3.6%	4.2%	34.8%	0%		13.3%	10.5%	2.3%	10%	0%		2.9%	17.4%	0%	11.1%	0%		9.7%	10.7%	3.9%	0%	0%		4%	4.4%
Buses	0	0	0	0		0	2	2	0	0		4	0	0	0	0		0	2	1	0	0		3	7
Buses %	0%	0%	0%	0%		0%	5.3%	0.3%	0%	0%		0.5%	0%	0%	0%	0%		0%	3.6%	0.4%	0%	0%		0.7%	0.5%
Articulated Trucks	0	0	0	0		0	0	23	10	0		33	8	0	12	0		20	15	12	0	0		27	80
Articulated Trucks %	0%	0%	0%	0%		0%	0%	3.2%	50%	0%		4.2%	34.8%	0%	16.7%	0%		16.1%	26.8%	4.2%	0%	0%		6.4%	5.7%
Bicycles on Road	1	0	0	0		1	1	0	0	0		1	0	0	0	0		0	0	0	0	0		0	2
Bicycles on Road %	3.6%	0%	0%	0%		1.3%	2.6%	0%	0%	0%		0.1%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0.1%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-
Pedestrians%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-	-	0%	-	-	-

Peak Hour: 07:45 AM - 08:45 AM Weather: Few Clouds (8 °C)



Peak Hour: 04:00 PM - 05:00 PM Weather: Overcast Clouds (24 °C)





Turning Movement Count (1 . BOSTON CHURCH RD & LAWSON RD) CustID: 0000790

Start Time	N Approach BOSTON CHURCH RD						E Approach LAWSON RD						S Approach BOSTON CHURCH RD						W Approach 8550 BOSTON CHURCH RD (SOUTH ACCESS)						Int. Total (15 min)	Int. Total (1 hr)	
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total			
2025-04-24 06:00:00	0	0	6	0	0	6	4	0	0	0	0	4	0	2	0	0	0	2	0	0	1	0	0	1	13		
2025-04-24 06:15:00	0	5	5	0	0	10	7	0	0	0	0	7	1	5	0	0	0	6	0	0	0	0	0	0	23		
2025-04-24 06:30:00	0	3	3	0	0	6	6	1	3	0	0	10	0	1	0	0	0	1	1	0	1	0	0	2	19		
2025-04-24 06:45:00	0	8	10	0	0	18	9	4	1	1	0	15	0	1	0	0	0	1	0	0	0	0	0	0	34	89	
2025-04-24 07:00:00	0	3	10	0	0	13	6	0	0	0	0	6	0	0	1	0	0	1	0	0	2	0	0	2	22	98	
2025-04-24 07:15:00	0	1	13	0	0	14	4	0	2	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	20	95	
2025-04-24 07:30:00	3	2	11	0	0	16	7	2	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	25	101	
2025-04-24 07:45:00	4	4	14	0	0	22	11	3	0	0	0	14	0	0	0	0	0	0	0	1	1	0	0	2	38	105	
2025-04-24 08:00:00	6	3	13	0	0	22	8	0	1	0	0	9	0	0	0	0	0	0	0	1	3	0	0	4	35	118	
2025-04-24 08:15:00	3	4	20	0	0	27	12	1	2	0	0	15	1	0	0	0	0	1	0	0	0	0	0	0	43	141	
2025-04-24 08:30:00	1	3	10	0	0	14	5	0	0	0	0	5	1	0	0	0	0	1	0	0	1	0	0	1	21	137	
2025-04-24 08:45:00	1	8	11	0	0	20	11	0	1	0	0	12	0	2	0	0	0	2	0	0	0	0	0	0	34	133	
BREAK																											
2025-04-24 16:00:00	0	5	21	1	0	27	12	1	3	1	0	17	2	2	0	0	0	4	0	2	2	0	0	4	52		
2025-04-24 16:15:00	3	7	6	0	2	16	17	15	1	1	0	34	0	2	0	0	0	2	18	28	24	0	0	70	122		
2025-04-24 16:30:00	11	6	12	1	0	30	8	16	1	0	0	25	0	2	1	0	0	3	4	6	4	0	1	14	72		
2025-04-24 16:45:00	1	5	9	0	0	15	8	0	0	0	0	8	0	2	0	0	0	2	0	2	0	0	0	2	27	273	
2025-04-24 17:00:00	1	2	15	1	0	19	26	0	3	0	0	29	0	0	0	0	0	0	1	1	2	0	0	4	52	273	
2025-04-24 17:15:00	0	4	17	0	0	21	7	0	0	0	0	7	0	1	0	0	0	1	0	1	1	0	0	2	31	182	
2025-04-24 17:30:00	1	6	18	0	0	25	12	1	0	0	0	13	0	1	0	0	0	1	0	1	0	0	0	1	40	150	
2025-04-24 17:45:00	0	2	12	0	0	14	11	0	0	0	0	11	1	0	0	0	0	1	0	1	0	0	0	1	27	150	
2025-04-24 18:00:00	0	5	12	0	0	17	9	0	0	0	0	9	0	1	0	0	0	1	0	0	0	0	0	0	27	125	
2025-04-24 18:15:00	0	2	9	0	0	11	9	0	0	0	0	9	0	1	0	0	0	1	0	0	0	0	0	0	21	115	
2025-04-24 18:30:00	0	2	9	0	0	11	6	0	1	0	0	7	0	0	0	0	0	0	0	2	1	0	0	3	21	96	
2025-04-24 18:45:00	0	2	9	0	0	11	8	0	0	0	0	8	0	2	0	0	0	2	1	0	0	0	0	1	22	91	
Grand Total	35	92	275	3	2	405	223	44	19	3	0	289	6	25	2	0	0	33	25	46	43	0	1	114	841	-	
Approach%	8.6%	22.7%	67.9%	0.7%	-	-	77.2%	15.2%	6.6%	1%	-	-	18.2%	75.8%	6.1%	0%	-	-	21.9%	40.4%	37.7%	0%	-	-	-	-	
Totals %	4.2%	10.9%	32.7%	0.4%	-	48.2%	26.5%	5.2%	2.3%	0.4%	-	34.4%	0.7%	3%	0.2%	0%	-	3.9%	3%	5.5%	5.1%	0%	-	13.6%	-	-	
Heavy	0	5	146	2	-	-	109	0	3	0	-	-	0	2	0	0	-	-	0	0	0	0	-	-	-	-	
Heavy %	0%	5.4%	53.1%	66.7%	-	-	48.9%	0%	15.8%	0%	-	-	0%	8%	0%	0%	-	-	0%	0%	0%	0%	-	-	-	-	
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	



Peak Hour: 07:30 AM - 08:30 AM Weather: Few Clouds (8 °C)

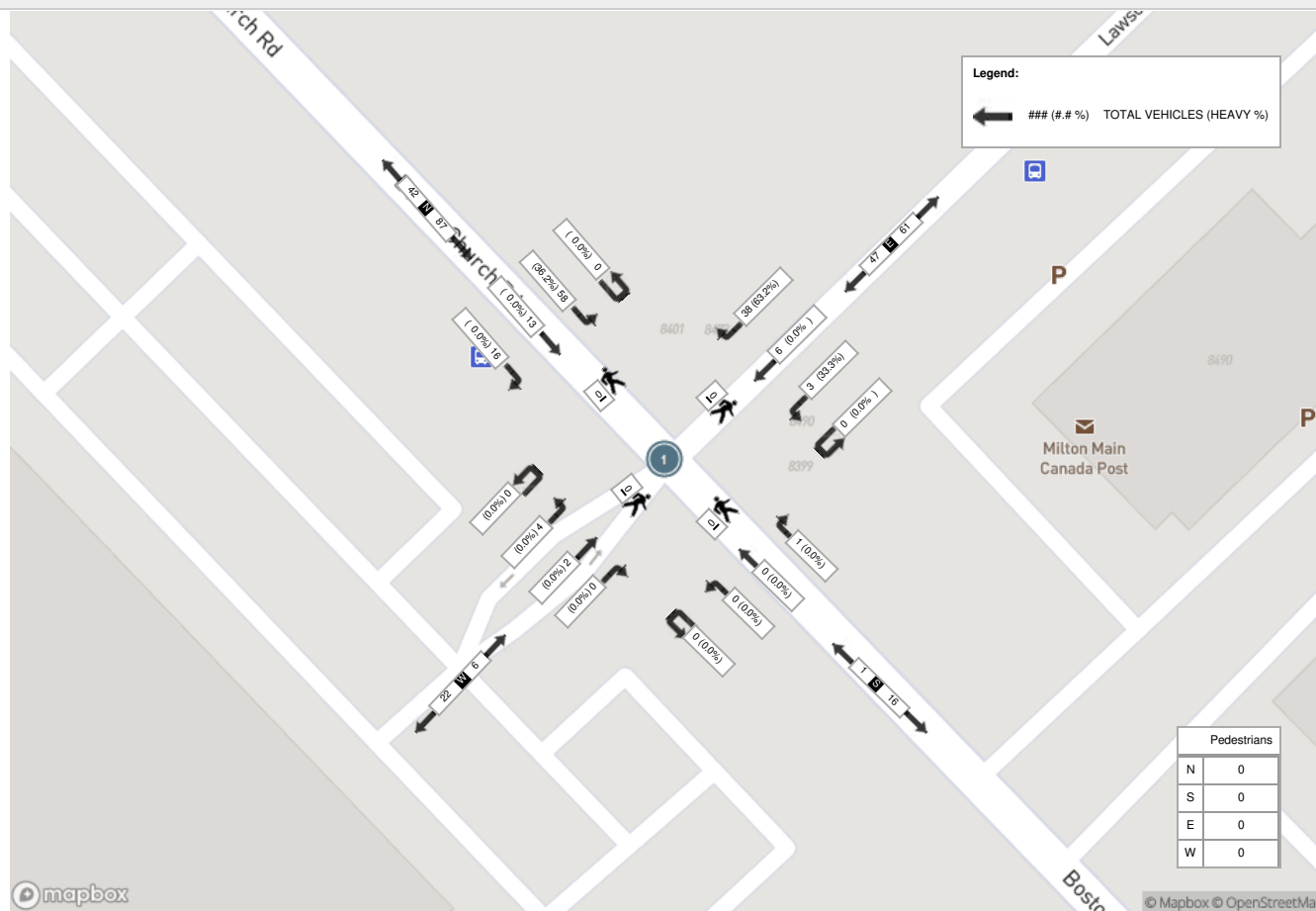
Start Time	N Approach BOSTON CHURCH RD						E Approach LAWSON RD						S Approach BOSTON CHURCH RD						W Approach 8550 BOSTON CHURCH RD (SOUTH ACCESS)						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
2025-04-24 07:30:00	3	2	11	0	0	16	7	2	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	25
2025-04-24 07:45:00	4	4	14	0	0	22	11	3	0	0	0	14	0	0	0	0	0	0	0	1	1	0	0	2	38
2025-04-24 08:00:00	6	3	13	0	0	22	8	0	1	0	0	9	0	0	0	0	0	0	0	1	3	0	0	4	35
2025-04-24 08:15:00	3	4	20	0	0	27	12	1	2	0	0	15	1	0	0	0	0	1	0	0	0	0	0	0	43
Grand Total	16	13	58	0	0	87	38	6	3	0	0	47	1	0	0	0	0	1	0	2	4	0	0	6	141
Approach%	18.4%	14.9%	66.7%	0%		-	80.9%	12.8%	6.4%	0%		-	100%	0%	0%	0%		-	0%	33.3%	66.7%	0%		-	-
Totals %	11.3%	9.2%	41.1%	0%		61.7%	27%	4.3%	2.1%	0%		33.3%	0.7%	0%	0%	0%		0.7%	0%	1.4%	2.8%	0%		4.3%	-
PHF	0.67	0.81	0.73	0		0.81	0.79	0.5	0.38	0		0.78	0.25	0	0	0		0.25	0	0.5	0.33	0		0.38	0.82
Heavy	0	0	21	0		21	24	0	1	0		25	0	0	0	0		0	0	0	0	0		0	46
Heavy %	0%	0%	36.2%	0%		24.1%	63.2%	0%	33.3%	0%		53.2%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	32.6%
Lights	16	13	37	0		66	14	6	2	0		22	1	0	0	0		1	0	2	4	0		6	95
Lights %	100%	100%	63.8%	0%		75.9%	36.8%	100%	66.7%	0%		46.8%	100%	0%	0%	0%		100%	0%	100%	100%	0%		100%	67.4%
Single-Unit Trucks	0	0	10	0		10	9	0	1	0		10	0	0	0	0		0	0	0	0	0		0	20
Single-Unit Trucks %	0%	0%	17.2%	0%		11.5%	23.7%	0%	33.3%	0%		21.3%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	14.2%
Buses	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%
Articulated Trucks	0	0	11	0		11	15	0	0	0		15	0	0	0	0		0	0	0	0	0		0	26
Articulated Trucks %	0%	0%	19%	0%		12.6%	39.5%	0%	0%	0%		31.9%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	18.4%
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-



Peak Hour: 04:15 PM - 05:15 PM Weather: Overcast Clouds (24 °C)

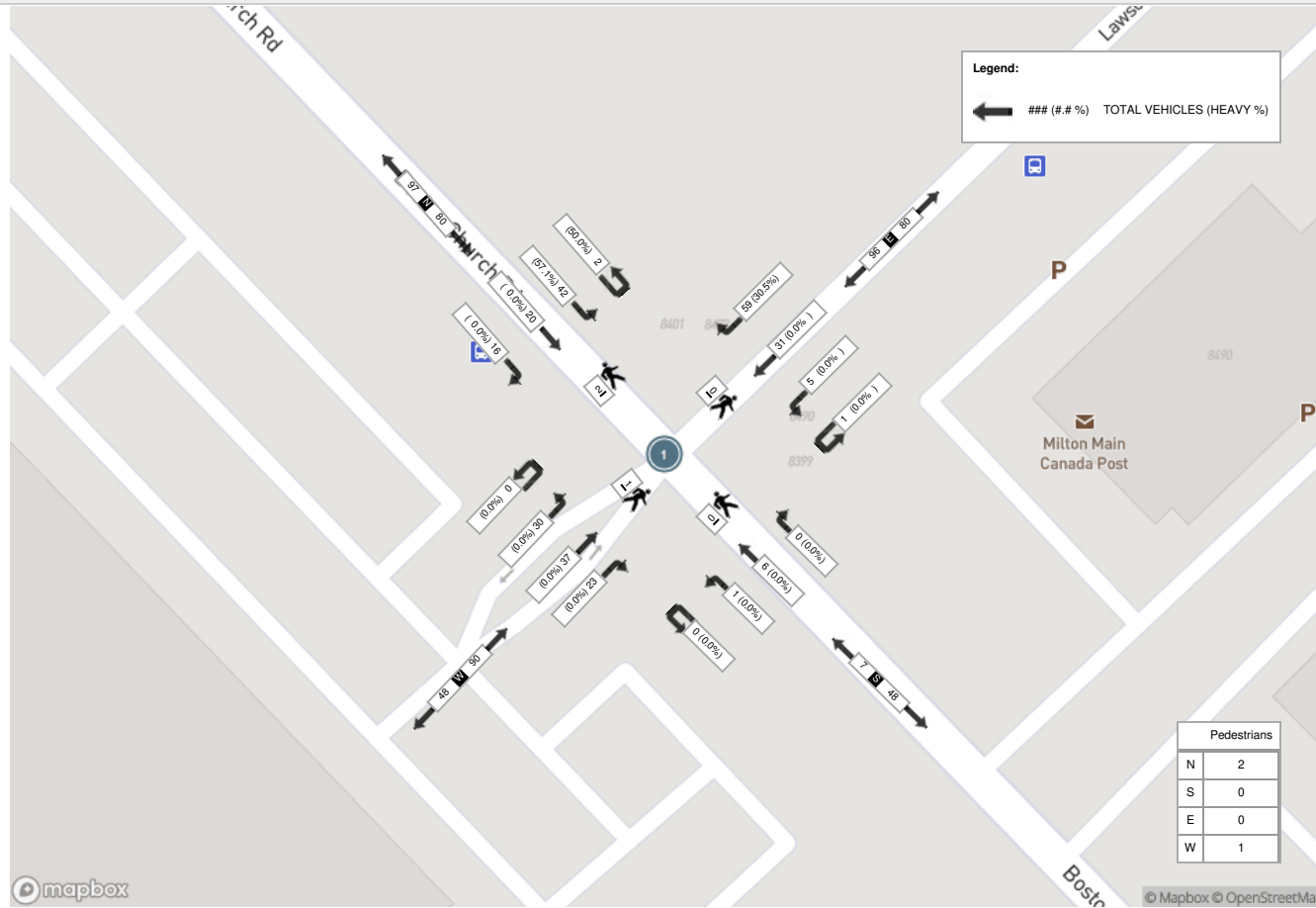
Start Time	N Approach BOSTON CHURCH RD						E Approach LAWSON RD						S Approach BOSTON CHURCH RD						W Approach 8550 BOSTON CHURCH RD (SOUTH ACCESS)						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
2025-04-24 16:15:00	3	7	6	0	2	16	17	15	1	1	0	34	0	2	0	0	0	2	18	28	24	0	0	70	122
2025-04-24 16:30:00	11	6	12	1	0	30	8	16	1	0	0	25	0	2	1	0	0	3	4	6	4	0	1	14	72
2025-04-24 16:45:00	1	5	9	0	0	15	8	0	0	0	0	8	0	2	0	0	0	2	0	2	0	0	0	2	27
2025-04-24 17:00:00	1	2	15	1	0	19	26	0	3	0	0	29	0	0	0	0	0	0	1	1	2	0	0	4	52
Grand Total	16	20	42	2	2	80	59	31	5	1	0	96	0	6	1	0	0	7	23	37	30	0	1	90	273
Approach%	20%	25%	52.5%	2.5%		-	61.5%	32.3%	5.2%	1%		-	0%	85.7%	14.3%	0%		-	25.6%	41.1%	33.3%	0%		-	-
Totals %	5.9%	7.3%	15.4%	0.7%		29.3%	21.6%	11.4%	1.8%	0.4%		35.2%	0%	2.2%	0.4%	0%		2.6%	8.4%	13.6%	11%	0%		33%	-
PHF	0.36	0.71	0.7	0.5		0.67	0.57	0.48	0.42	0.25		0.71	0	0.75	0.25	0		0.58	0.32	0.33	0.31	0		0.32	0.56
Heavy	0	0	24	1		25	18	0	0	0		18	0	0	0	0		0	0	0	0	0		0	43
Heavy %	0%	0%	57.1%	50%		31.3%	30.5%	0%	0%	0%		18.8%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	15.8%
Lights	16	19	18	1		54	41	31	5	1		78	0	5	1	0		6	23	37	30	0		90	228
Lights %	100%	95%	42.9%	50%		67.5%	69.5%	100%	100%	100%		81.3%	0%	83.3%	100%	0%		85.7%	100%	100%	100%	0%		100%	83.5%
Single-Unit Trucks	0	0	9	0		9	5	0	0	0		5	0	0	0	0		0	0	0	0	0		0	14
Single-Unit Trucks %	0%	0%	21.4%	0%		11.3%	8.5%	0%	0%	0%		5.2%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	5.1%
Buses	0	0	1	0		1	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	1
Buses %	0%	0%	2.4%	0%		1.3%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0.4%
Articulated Trucks	0	0	14	1		15	13	0	0	0		13	0	0	0	0		0	0	0	0	0		0	28
Articulated Trucks %	0%	0%	33.3%	50%		18.8%	22%	0%	0%	0%		13.5%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	10.3%
Bicycles on Road	0	1	0	0		1	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	2
Bicycles on Road %	0%	5%	0%	0%		1.3%	0%	0%	0%	0%		0%	0%	16.7%	0%	0%		14.3%	0%	0%	0%	0%		0%	0.7%
Pedestrians	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
Pedestrians%	-	-	-	-	66.7%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	33.3%	-	-

Peak Hour: 07:30 AM - 08:30 AM Weather: Few Clouds (8 °C)



Pedestrian	
N	0
S	0
E	0
W	0

Peak Hour: 04:15 PM - 05:15 PM Weather: Overcast Clouds (24 °C)





Turning Movement Count (4 . JAMES SNOW PKWY N & ESQUESING LN)

Start Time	N Approach ESQUESING LINE						E Approach JAMES SNOW PARKWAY						S Approach ESQUESING LINE						W Approach JAMES SNOW PARKWAY						Int. Total (15 min)	Int. Total (1 hr)
	Right N-W	Thru N-S	Left N-E	UTurn N-N	Peds N:	Approach Total	Right E-N	Thru E-W	Left E-S	UTurn E-E	Peds E:	Approach Total	Right S-E	Thru S-N	Left S-W	UTurn S-S	Peds S:	Approach Total	Right W-S	Thru W-E	Left W-N	UTurn W-W	Peds W:	Approach Total		
2025-04-24 06:00:00	3	14	4	0	0	21	2	26	3	0	0	31	4	7	3	0	0	14	5	22	0	0	0	27	93	
2025-04-24 06:15:00	1	14	16	0	0	31	3	45	6	0	0	54	0	4	11	0	0	15	7	28	0	0	0	35	135	
2025-04-24 06:30:00	0	37	15	0	0	52	3	37	4	0	0	44	0	12	8	0	0	20	16	35	0	0	0	51	167	
2025-04-24 06:45:00	3	41	17	0	0	61	4	41	12	0	0	57	1	9	11	0	0	21	15	25	0	0	0	40	179	574
2025-04-24 07:00:00	0	42	16	0	0	58	1	39	9	0	0	49	3	12	10	0	0	25	16	27	0	0	0	43	175	656
2025-04-24 07:15:00	4	53	29	0	0	86	1	31	8	0	0	40	0	26	15	0	0	41	20	38	2	0	0	60	227	748
2025-04-24 07:30:00	1	51	18	0	0	70	6	39	19	1	0	65	3	27	12	0	0	42	27	28	3	1	0	59	236	817
2025-04-24 07:45:00	3	86	21	0	0	110	4	65	31	0	0	100	1	22	17	0	0	40	43	26	0	0	0	69	319	957
2025-04-24 08:00:00	2	61	14	0	0	77	9	48	12	0	0	69	2	27	20	0	0	49	34	31	1	0	0	66	261	1043
2025-04-24 08:15:00	0	68	18	0	0	86	5	62	24	0	1	91	1	22	26	0	0	49	36	31	0	0	0	67	293	1109
2025-04-24 08:30:00	2	61	13	0	0	76	3	36	12	0	0	51	0	31	20	0	0	51	27	40	0	0	0	67	245	1118
2025-04-24 08:45:00	1	65	17	0	0	83	4	43	24	0	0	71	0	20	26	0	0	46	43	29	0	0	0	72	272	1071
BREAK																										
2025-04-24 16:00:00	2	43	6	0	0	51	17	134	37	0	0	188	5	69	28	0	0	102	33	42	2	0	0	77	418	
2025-04-24 16:15:00	0	45	6	0	0	51	16	162	38	1	0	217	2	56	46	0	0	104	30	42	2	0	0	74	446	
2025-04-24 16:30:00	0	32	4	0	0	36	28	170	39	0	0	237	3	81	39	0	0	123	37	50	4	0	0	91	487	
2025-04-24 16:45:00	0	44	6	0	0	50	17	152	41	1	0	211	1	49	39	0	0	89	31	51	2	0	0	84	434	1785
2025-04-24 17:00:00	4	36	10	0	0	50	25	150	33	1	0	209	4	94	44	0	0	142	32	50	2	0	0	84	485	1852
2025-04-24 17:15:00	6	50	4	0	0	60	17	174	37	0	0	228	2	55	39	0	0	96	36	42	3	0	0	81	465	1871
2025-04-24 17:30:00	2	39	2	0	0	43	15	202	46	1	0	264	4	62	36	0	0	102	28	38	0	0	0	66	475	1859
2025-04-24 17:45:00	4	35	6	0	0	45	15	110	31	0	0	156	4	50	27	0	0	81	22	27	5	0	0	54	336	1761
2025-04-24 18:00:00	1	25	4	0	0	30	10	74	24	2	0	110	2	39	15	0	3	56	24	36	1	0	0	61	257	1533
2025-04-24 18:15:00	0	37	5	0	0	42	11	65	28	2	0	106	2	31	20	0	1	53	14	31	1	0	0	46	247	1315
2025-04-24 18:30:00	2	33	6	0	0	41	8	59	20	3	0	90	2	31	22	0	0	55	13	33	1	0	0	47	233	1073
2025-04-24 18:45:00	6	50	3	0	0	59	8	90	13	0	0	111	0	34	14	0	0	48	14	28	0	0	0	42	260	997
Grand Total	47	1062	260	0	0	1369	232	2054	551	12	1	2849	46	870	548	0	4	1464	603	830	29	1	0	1463	7145	-
Approach%	3.4%	77.6%	19%	0%		-	8.1%	72.1%	19.3%	0.4%		-	3.1%	59.4%	37.4%	0%		-	41.2%	56.7%	2%	0.1%		-	-	-
Totals %	0.7%	14.9%	3.6%	0%		19.2%	3.2%	28.7%	7.7%	0.2%		39.9%	0.6%	12.2%	7.7%	0%		20.5%	8.4%	11.6%	0.4%	0%		20.5%	-	-
Heavy	4	20	8	0		-	8	255	61	0		-	10	16	30	0		-	42	149	2	0		-	-	-
Heavy %	8.5%	1.9%	3.1%	0%		-	3.4%	12.4%	11.1%	0%		-	21.7%	1.8%	5.5%	0%		-	7%	18%	6.9%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-



Peak Hour: 07:45 AM - 08:45 AM Weather: Few Clouds (8 °C)

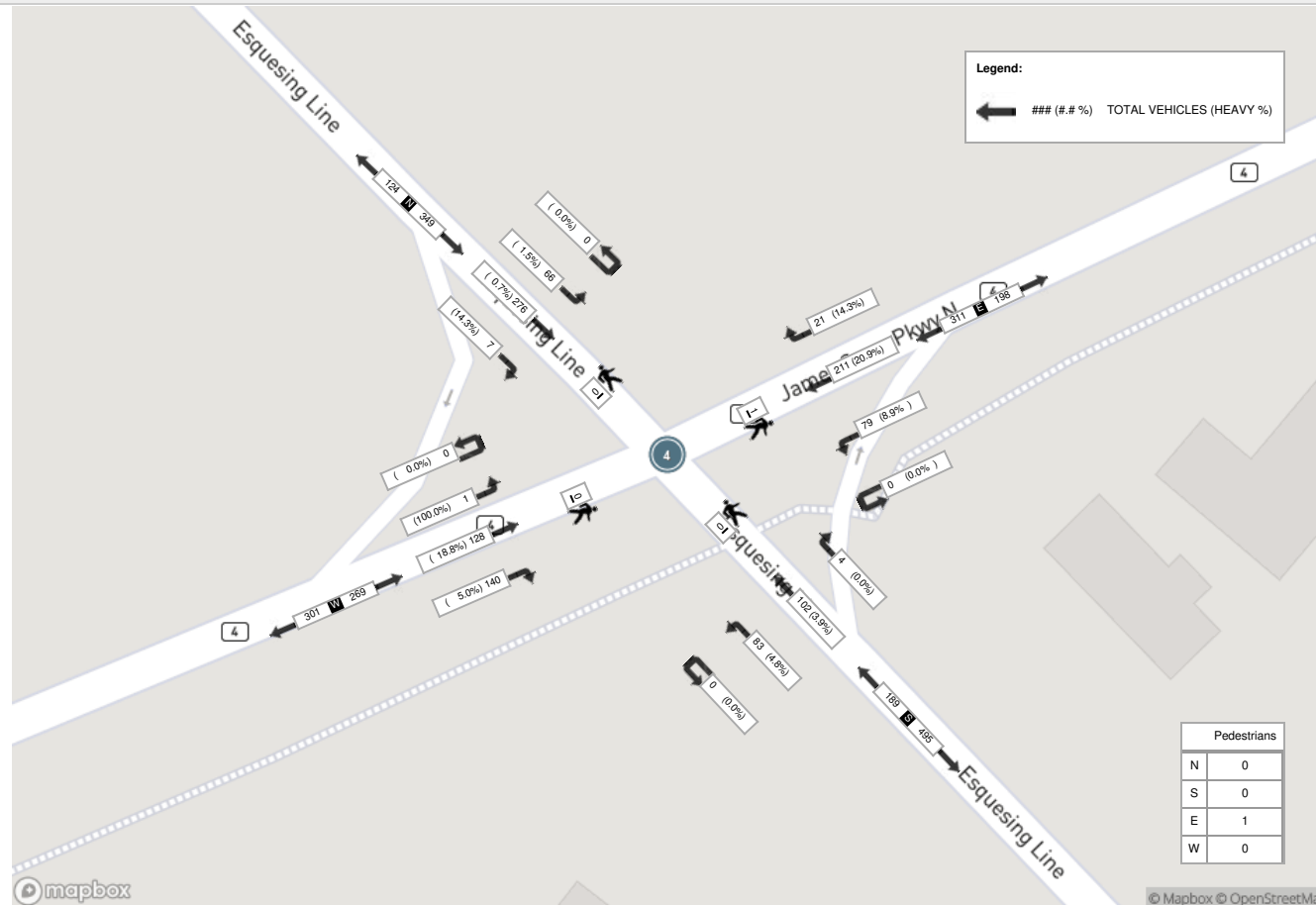
Start Time	N Approach ESQUESING LINE						E Approach JAMES SNOW PARKWAY						S Approach ESQUESING LINE						W Approach JAMES SNOW PARKWAY						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
2025-04-24 07:45:00	3	86	21	0	0	110	4	65	31	0	0	100	1	22	17	0	0	40	43	26	0	0	0	69	319
2025-04-24 08:00:00	2	61	14	0	0	77	9	48	12	0	0	69	2	27	20	0	0	49	34	31	1	0	0	66	261
2025-04-24 08:15:00	0	68	18	0	0	86	5	62	24	0	1	91	1	22	26	0	0	49	36	31	0	0	0	67	293
2025-04-24 08:30:00	2	61	13	0	0	76	3	36	12	0	0	51	0	31	20	0	0	51	27	40	0	0	0	67	245
Grand Total	7	276	66	0	0	349	21	211	79	0	1	311	4	102	83	0	0	189	140	128	1	0	0	269	1118
Approach%	2%	79.1%	18.9%	0%		-	6.8%	67.8%	25.4%	0%		-	2.1%	54%	43.9%	0%		-	52%	47.6%	0.4%	0%		-	-
Totals %	0.6%	24.7%	5.9%	0%		31.2%	1.9%	18.9%	7.1%	0%		27.8%	0.4%	9.1%	7.4%	0%		16.9%	12.5%	11.4%	0.1%	0%		24.1%	-
PHF	0.58	0.8	0.79	0		0.79	0.58	0.81	0.64	0		0.78	0.5	0.82	0.8	0		0.93	0.81	0.8	0.25	0		0.97	0.88
Heavy	1	2	1	0		4	3	44	7	0		54	0	4	4	0		8	7	24	1	0		32	98
Heavy %	14.3%	0.7%	1.5%	0%		1.1%	14.3%	20.9%	8.9%	0%		17.4%	0%	3.9%	4.8%	0%		4.2%	5%	18.8%	100%	0%		11.9%	8.8%
Lights	6	274	65	0		345	18	167	72	0		257	4	98	79	0		181	133	104	0	0		237	1020
Lights %	85.7%	99.3%	98.5%	0%		98.9%	85.7%	79.1%	91.1%	0%		82.6%	100%	96.1%	95.2%	0%		95.8%	95%	81.3%	0%	0%		88.1%	91.2%
Single-Unit Trucks	0	1	1	0		2	1	25	4	0		30	0	0	4	0		4	6	10	1	0		17	53
Single-Unit Trucks %	0%	0.4%	1.5%	0%		0.6%	4.8%	11.8%	5.1%	0%		9.6%	0%	0%	4.8%	0%		2.1%	4.3%	7.8%	100%	0%		6.3%	4.7%
Buses	0	1	0	0		1	0	2	0	0		2	0	3	0	0		3	0	0	0	0		0	6
Buses %	0%	0.4%	0%	0%		0.3%	0%	0.9%	0%	0%		0.6%	0%	2.9%	0%	0%		1.6%	0%	0%	0%	0%		0%	0.5%
Articulated Trucks	1	0	0	0		1	2	17	3	0		22	0	1	0	0		1	1	14	0	0		15	39
Articulated Trucks %	14.3%	0%	0%	0%		0.3%	9.5%	8.1%	3.8%	0%		7.1%	0%	1%	0%	0%		0.5%	0.7%	10.9%	0%	0%		5.6%	3.5%
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	0%	-	-	-	-	-	100%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-



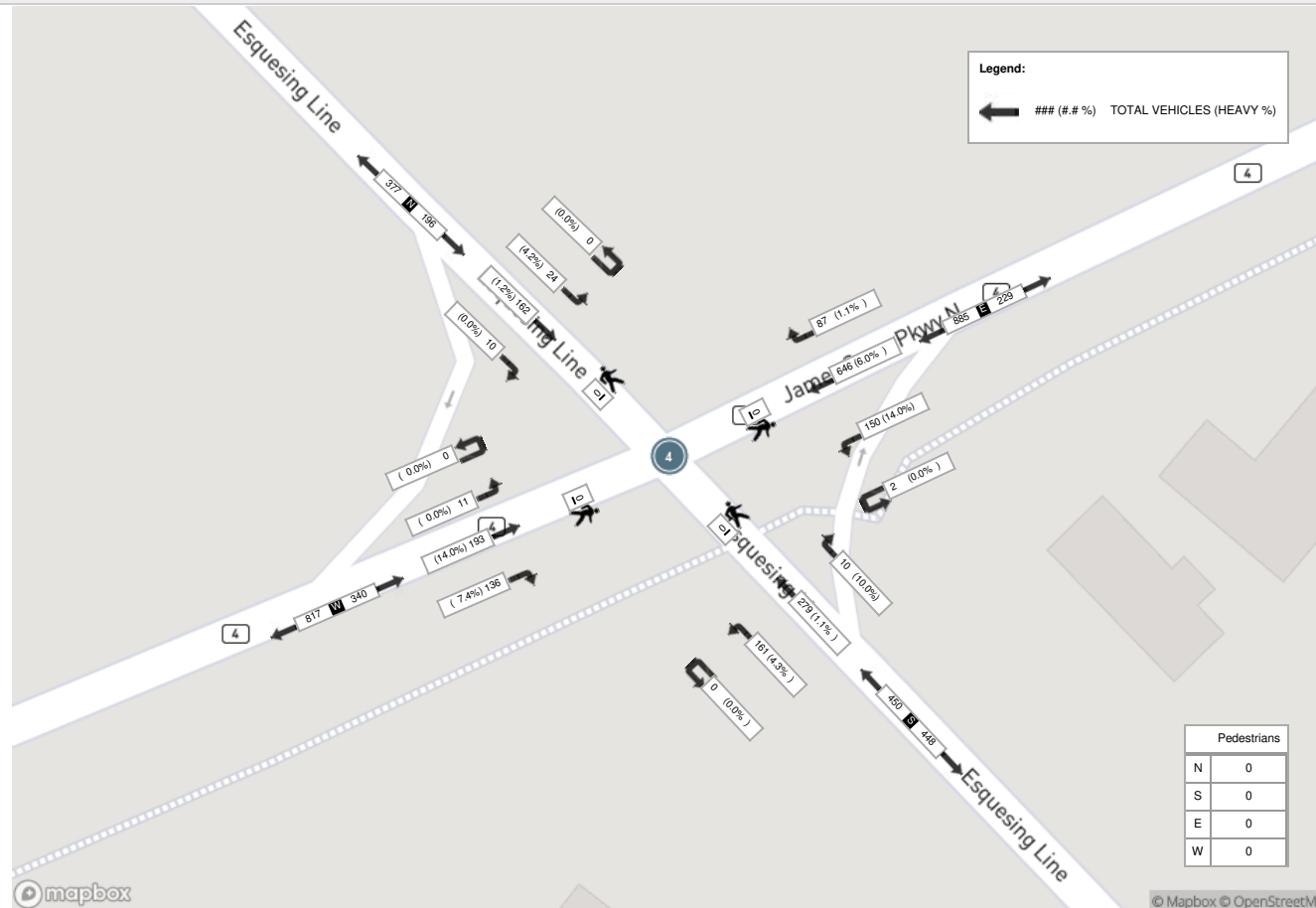
Peak Hour: 04:30 PM - 05:30 PM Weather: Overcast Clouds (24 °C)

Start Time	N Approach ESQUESING LINE						E Approach JAMES SNOW PARKWAY						S Approach ESQUESING LINE						W Approach JAMES SNOW PARKWAY						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
2025-04-24 16:30:00	0	32	4	0	0	36	28	170	39	0	0	237	3	81	39	0	0	123	37	50	4	0	0	91	487
2025-04-24 16:45:00	0	44	6	0	0	50	17	152	41	1	0	211	1	49	39	0	0	89	31	51	2	0	0	84	434
2025-04-24 17:00:00	4	36	10	0	0	50	25	150	33	1	0	209	4	94	44	0	0	142	32	50	2	0	0	84	485
2025-04-24 17:15:00	6	50	4	0	0	60	17	174	37	0	0	228	2	55	39	0	0	96	36	42	3	0	0	81	465
Grand Total	10	162	24	0	0	196	87	646	150	2	0	885	10	279	161	0	0	450	136	193	11	0	0	340	1871
Approach%	5.1%	82.7%	12.2%	0%		-	9.8%	73%	16.9%	0.2%		-	2.2%	62%	35.8%	0%		-	40%	56.8%	3.2%	0%		-	-
Totals %	0.5%	8.7%	1.3%	0%		10.5%	4.6%	34.5%	8%	0.1%		47.3%	0.5%	14.9%	8.6%	0%		24.1%	7.3%	10.3%	0.6%	0%		18.2%	-
PHF	0.42	0.81	0.6	0		0.82	0.78	0.93	0.91	0.5		0.93	0.63	0.74	0.91	0		0.79	0.92	0.95	0.69	0		0.93	0.96
Heavy	0	2	1	0		3	1	39	21	0		61	1	3	7	0		11	10	27	0	0		37	112
Heavy %	0%	1.2%	4.2%	0%		1.5%	1.1%	6%	14%	0%		6.9%	10%	1.1%	4.3%	0%		2.4%	7.4%	14%	0%	0%		10.9%	6%
Lights	10	160	23	0		193	86	607	129	2		824	9	276	154	0		439	126	166	11	0		303	1759
Lights %	100%	98.8%	95.8%	0%		98.5%	98.9%	94%	86%	100%		93.1%	90%	98.9%	95.7%	0%		97.6%	92.6%	86%	100%	0%		89.1%	94%
Single-Unit Trucks	0	2	1	0		3	1	7	10	0		18	0	2	4	0		6	5	11	0	0		16	43
Single-Unit Trucks %	0%	1.2%	4.2%	0%		1.5%	1.1%	1.1%	6.7%	0%		2%	0%	0.7%	2.5%	0%		1.3%	3.7%	5.7%	0%	0%		4.7%	2.3%
Buses	0	0	0	0		0	0	1	0	0		1	0	1	3	0		4	1	1	0	0		2	7
Buses %	0%	0%	0%	0%		0%	0%	0.2%	0%	0%		0.1%	0%	0.4%	1.9%	0%		0.9%	0.7%	0.5%	0%	0%		0.6%	0.4%
Articulated Trucks	0	0	0	0		0	0	31	11	0		42	1	0	0	0		1	4	15	0	0		19	62
Articulated Trucks %	0%	0%	0%	0%		0%	0%	4.8%	7.3%	0%		4.7%	10%	0%	0%	0%		0.2%	2.9%	7.8%	0%	0%		5.6%	3.3%
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-

Peak Hour: 07:45 AM - 08:45 AM Weather: Few Clouds (8 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Overcast Clouds (24 °C)





Turning Movement Count (3 . LAWSON RD & ESQUESING LN) CustID: 00000791

Start Time	N Approach ESQUESING LINE						E Approach LAWSON RD						S Approach ESQUESING LINE						W Approach LAWSON RD						Int. Total (15 min)	Int. Total (1 hr)
	Right N-W	Thru N-S	Left N-E	UTurn N-N	Peds N:	Approach Total	Right E-N	Thru E-W	Left E-S	UTurn E-E	Peds E:	Approach Total	Right S-E	Thru S-N	Left S-W	UTurn S-S	Peds S:	Approach Total	Right W-S	Thru W-E	Left W-N	UTurn W-W	Peds W:	Approach Total		
2025-04-24 06:00:00	6	10	5	0	0	21	1	3	0	0	0	4	3	12	14	0	0	29	4	4	2	0	0	10	64	
2025-04-24 06:15:00	6	15	6	0	0	27	2	6	0	0	0	8	3	14	15	0	0	32	8	1	1	0	0	10	77	
2025-04-24 06:30:00	8	28	18	0	0	54	1	5	0	0	0	6	1	21	11	0	0	33	7	3	0	0	0	10	103	
2025-04-24 06:45:00	10	42	11	0	0	63	1	6	0	0	0	7	2	18	28	0	0	48	4	4	1	0	0	9	127	371
2025-04-24 07:00:00	5	54	12	0	1	71	0	5	1	0	0	6	2	24	15	0	0	41	9	1	2	0	0	12	130	437
2025-04-24 07:15:00	9	66	9	0	0	84	1	3	0	0	0	4	3	39	17	0	0	59	7	3	1	0	0	11	158	518
2025-04-24 07:30:00	9	70	12	0	0	91	1	1	1	0	0	3	4	38	14	0	0	56	11	4	0	0	0	15	165	580
2025-04-24 07:45:00	18	114	22	0	0	154	4	9	0	0	0	13	5	34	13	0	0	52	7	4	0	0	0	11	230	683
2025-04-24 08:00:00	11	80	19	0	0	110	1	3	1	0	0	5	4	47	10	0	0	61	7	3	0	0	0	10	186	739
2025-04-24 08:15:00	17	93	15	0	0	125	4	4	0	0	1	8	4	48	25	0	0	77	4	8	0	0	0	12	222	803
2025-04-24 08:30:00	8	75	13	0	0	96	3	5	3	0	0	11	7	43	12	0	0	62	10	0	1	0	0	11	180	818
2025-04-24 08:45:00	11	95	20	0	0	126	2	3	1	0	0	6	3	48	12	0	1	63	5	4	1	0	0	10	205	793
BREAK																										
2025-04-24 16:00:00	3	86	20	0	0	109	17	2	6	0	0	25	1	76	12	0	0	89	29	13	4	0	0	46	269	
2025-04-24 16:15:00	7	89	18	0	0	114	17	8	2	0	0	27	1	79	20	0	0	100	38	15	9	0	0	62	303	
2025-04-24 16:30:00	11	90	8	0	0	109	18	4	2	0	0	24	2	91	15	0	0	108	43	8	12	0	0	63	304	
2025-04-24 16:45:00	6	95	15	0	0	116	11	4	1	0	0	16	3	80	8	0	0	91	18	11	3	0	0	32	255	1131
2025-04-24 17:00:00	4	90	7	0	0	101	33	5	3	0	0	41	6	95	6	0	0	107	47	12	14	0	0	73	322	1184
2025-04-24 17:15:00	6	107	17	1	0	131	16	2	4	0	0	22	3	73	6	0	0	82	25	19	3	0	0	47	282	1163
2025-04-24 17:30:00	4	99	7	0	0	110	15	6	4	0	0	25	1	78	3	0	0	82	16	6	2	0	0	24	241	1100
2025-04-24 17:45:00	7	80	4	0	0	91	10	7	2	0	0	19	2	64	3	0	0	69	15	5	3	0	0	23	202	1047
2025-04-24 18:00:00	1	69	10	0	0	80	18	5	6	0	0	29	3	39	5	0	0	47	13	2	2	0	0	17	173	898
2025-04-24 18:15:00	7	66	8	0	0	81	17	3	4	0	1	24	2	31	4	0	0	37	15	6	1	0	0	22	164	780
2025-04-24 18:30:00	5	56	4	0	0	65	6	2	1	0	0	9	0	50	11	0	0	61	18	11	2	0	0	31	166	705
2025-04-24 18:45:00	2	72	4	0	0	78	4	4	3	0	0	11	2	38	2	0	0	42	6	8	1	0	0	15	146	649
Grand Total	181	1741	284	1	1	2207	203	105	45	0	2	353	67	1180	281	0	1	1528	366	155	65	0	0	586	4674	-
Approach%	8.2%	78.9%	12.9%	0%		-	57.5%	29.7%	12.7%	0%		-	4.4%	77.2%	18.4%	0%		-	62.5%	26.5%	11.1%	0%		-	-	-
Totals %	3.9%	37.2%	6.1%	0%		47.2%	4.3%	2.2%	1%	0%		7.6%	1.4%	25.2%	6%	0%		32.7%	7.8%	3.3%	1.4%	0%		12.5%	-	-
Heavy	36	63	23	0		-	10	56	5	0		-	6	32	44	0		-	70	89	10	0		-	-	-
Heavy %	19.9%	3.6%	8.1%	0%		-	4.9%	53.3%	11.1%	0%		-	9%	2.7%	15.7%	0%		-	19.1%	57.4%	15.4%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-



Peak Hour: 07:45 AM - 08:45 AM Weather: Few Clouds (8 °C)

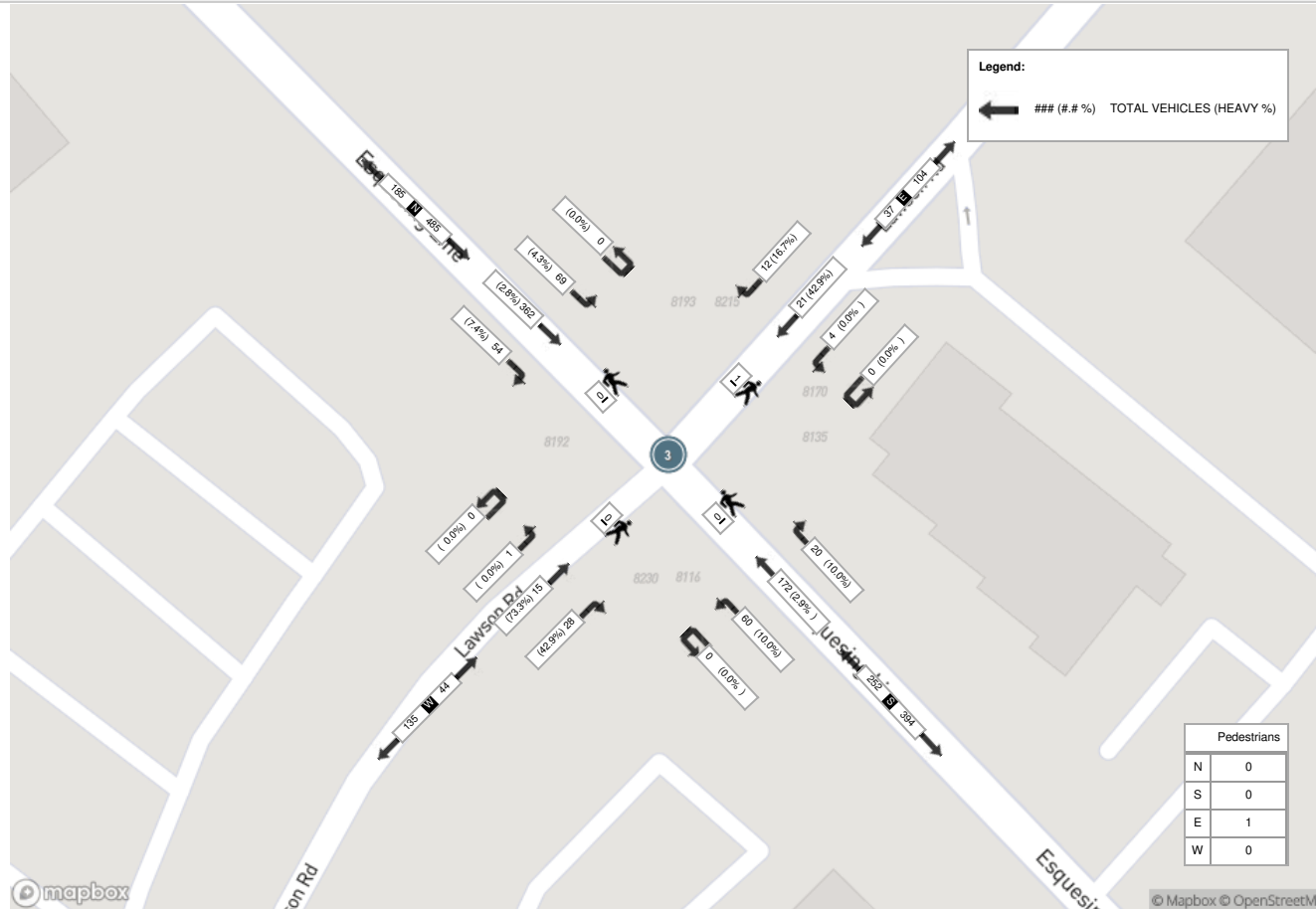
Start Time	N Approach ESQUESING LINE						E Approach LAWSON RD						S Approach ESQUESING LINE						W Approach LAWSON RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
2025-04-24 07:45:00	18	114	22	0	0	154	4	9	0	0	0	13	5	34	13	0	0	52	7	4	0	0	0	11	230
2025-04-24 08:00:00	11	80	19	0	0	110	1	3	1	0	0	5	4	47	10	0	0	61	7	3	0	0	0	10	186
2025-04-24 08:15:00	17	93	15	0	0	125	4	4	0	0	1	8	4	48	25	0	0	77	4	8	0	0	0	12	222
2025-04-24 08:30:00	8	75	13	0	0	96	3	5	3	0	0	11	7	43	12	0	0	62	10	0	1	0	0	11	180
Grand Total	54	362	69	0	0	485	12	21	4	0	1	37	20	172	60	0	0	252	28	15	1	0	0	44	818
Approach%	11.1%	74.6%	14.2%	0%		-	32.4%	56.8%	10.8%	0%		-	7.9%	68.3%	23.8%	0%		-	63.6%	34.1%	2.3%	0%		-	-
Totals %	6.6%	44.3%	8.4%	0%		59.3%	1.5%	2.6%	0.5%	0%		4.5%	2.4%	21%	7.3%	0%		30.8%	3.4%	1.8%	0.1%	0%		5.4%	-
PHF	0.75	0.79	0.78	0		0.79	0.75	0.58	0.33	0		0.71	0.71	0.9	0.6	0		0.82	0.7	0.47	0.25	0		0.92	0.89
Heavy	4	10	3	0		17	2	9	0	0		11	2	5	6	0		13	12	11	0	0		23	64
Heavy %	7.4%	2.8%	4.3%	0%		3.5%	16.7%	42.9%	0%	0%		29.7%	10%	2.9%	10%	0%		5.2%	42.9%	73.3%	0%	0%		52.3%	7.8%
Lights	50	352	66	0		468	10	12	4	0		26	18	167	54	0		239	16	4	1	0		21	754
Lights %	92.6%	97.2%	95.7%	0%		96.5%	83.3%	57.1%	100%	0%		70.3%	90%	97.1%	90%	0%		94.8%	57.1%	26.7%	100%	0%		47.7%	92.2%
Single-Unit Trucks	2	7	2	0		11	2	9	0	0		11	2	2	2	0		6	3	1	0	0		4	32
Single-Unit Trucks %	3.7%	1.9%	2.9%	0%		2.3%	16.7%	42.9%	0%	0%		29.7%	10%	1.2%	3.3%	0%		2.4%	10.7%	6.7%	0%	0%		9.1%	3.9%
Buses	0	1	0	0		1	0	0	0	0		0	0	3	0	0		3	0	0	0	0		0	4
Buses %	0%	0.3%	0%	0%		0.2%	0%	0%	0%	0%		0%	0%	1.7%	0%	0%		1.2%	0%	0%	0%	0%		0%	0.5%
Articulated Trucks	2	2	1	0		5	0	0	0	0		0	0	0	4	0		4	9	10	0	0		19	28
Articulated Trucks %	3.7%	0.6%	1.4%	0%		1%	0%	0%	0%	0%		0%	0%	0%	6.7%	0%		1.6%	32.1%	66.7%	0%	0%		43.2%	3.4%
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	0%	-	-	-	-	-	100%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-



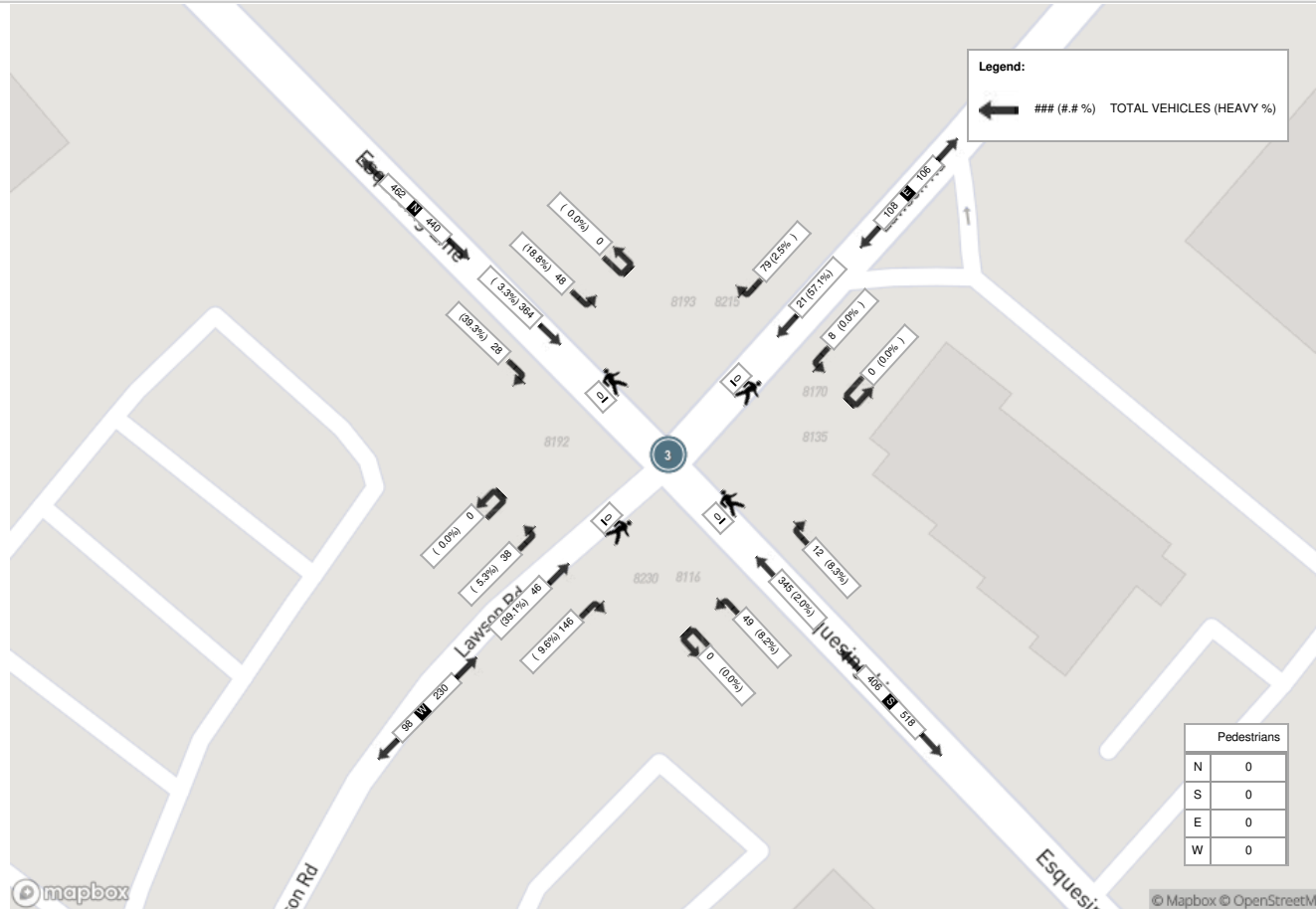
Peak Hour: 04:15 PM - 05:15 PM Weather: Overcast Clouds (24 °C)

Start Time	N Approach ESQUESING LINE						E Approach LAWSON RD						S Approach ESQUESING LINE						W Approach LAWSON RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
2025-04-24 16:15:00	7	89	18	0	0	114	17	8	2	0	0	27	1	79	20	0	0	100	38	15	9	0	0	62	303
2025-04-24 16:30:00	11	90	8	0	0	109	18	4	2	0	0	24	2	91	15	0	0	108	43	8	12	0	0	63	304
2025-04-24 16:45:00	6	95	15	0	0	116	11	4	1	0	0	16	3	80	8	0	0	91	18	11	3	0	0	32	255
2025-04-24 17:00:00	4	90	7	0	0	101	33	5	3	0	0	41	6	95	6	0	0	107	47	12	14	0	0	73	322
Grand Total	28	364	48	0	0	440	79	21	8	0	0	108	12	345	49	0	0	406	146	46	38	0	0	230	1184
Approach%	6.4%	82.7%	10.9%	0%		-	73.1%	19.4%	7.4%	0%		-	3%	85%	12.1%	0%		-	63.5%	20%	16.5%	0%		-	-
Totals %	2.4%	30.7%	4.1%	0%		37.2%	6.7%	1.8%	0.7%	0%		9.1%	1%	29.1%	4.1%	0%		34.3%	12.3%	3.9%	3.2%	0%		19.4%	-
PHF	0.64	0.96	0.67	0		0.95	0.6	0.66	0.67	0		0.66	0.5	0.91	0.61	0		0.94	0.78	0.77	0.68	0		0.79	0.92
Heavy	11	12	9	0		32	2	12	0	0		14	1	7	4	0		12	14	18	2	0		34	92
Heavy %	39.3%	3.3%	18.8%	0%		7.3%	2.5%	57.1%	0%	0%		13%	8.3%	2%	8.2%	0%		3%	9.6%	39.1%	5.3%	0%		14.8%	7.8%
Lights	17	352	39	0		408	77	9	8	0		94	11	338	45	0		394	132	28	36	0		196	1092
Lights %	60.7%	96.7%	81.3%	0%		92.7%	97.5%	42.9%	100%	0%		87%	91.7%	98%	91.8%	0%		97%	90.4%	60.9%	94.7%	0%		85.2%	92.2%
Single-Unit Trucks	3	9	7	0		19	2	3	0	0		5	0	3	0	0		3	6	7	1	0		14	41
Single-Unit Trucks %	10.7%	2.5%	14.6%	0%		4.3%	2.5%	14.3%	0%	0%		4.6%	0%	0.9%	0%	0%		0.7%	4.1%	15.2%	2.6%	0%		6.1%	3.5%
Buses	0	1	0	0		1	0	0	0	0		0	0	4	0	0		4	0	0	0	0		0	5
Buses %	0%	0.3%	0%	0%		0.2%	0%	0%	0%	0%		0%	0%	1.2%	0%	0%		1%	0%	0%	0%	0%		0%	0.4%
Articulated Trucks	8	2	2	0		12	0	9	0	0		9	1	0	4	0		5	8	11	1	0		20	46
Articulated Trucks %	28.6%	0.5%	4.2%	0%		2.7%	0%	42.9%	0%	0%		8.3%	8.3%	0%	8.2%	0%		1.2%	5.5%	23.9%	2.6%	0%		8.7%	3.9%
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-
Pedestrians%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-

Peak Hour: 07:45 AM - 08:45 AM Weather: Few Clouds (8 °C)



Peak Hour: 04:15 PM - 05:15 PM Weather: Overcast Clouds (24 °C)

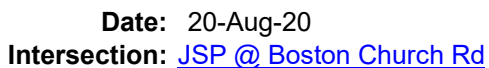


Controller Timing Data

<u>Timing Plan 1</u>																
Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Minimum Green		15		10		15		5								
Delayed Green																
Walk		8						8								
Walk 2																
Walk Max																
Pedestrian Clearance		17						17								
Pedestrian Clearance 2																
Pedestrian Clearance Max																
Vehicle Extension		4.0		4.0		4.0		4.0								
Vehicle Extension 2																
Max 1		34		34		34		34								
Max 2																
Max 3																
Dynamic Max																
Dynamic Max Step																
Yellow Change		4.0		4.0		4.0		4.0								
Red Clearance		2.0		2.0		2.0		2.0								

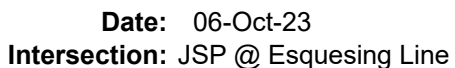
Coordinator Options

Coord Options			
Manual Pattern		ECPI Coord	
System Source		System Format	
Splits In		Offset IN	
Transition		Max Select	
Dwell/Add Time		Enable Man Sync	
DLY Coord WK-LZ		No Force Off	
Offset Ref		Lead Cal Use Ped Tm	
Ped Recall		Ped Reserve	
Local Zero Ovr		FO Add INI Green	
Re-Sync Count		Multisync	



Intersection: JSP @ Boston Church Rd

8 Phase Basic Timing Sheet												
	1	2	3	4	5	6	7	8	2 Ped	4 Ped	6 Ped	8 Ped
Phases in use	X	X	X	X	X	X	X	X	x	x	x	x
Direction	WBL	EB	NBL	SB	EBL	WB	SBL	NB				
Min Green	7	20	7	15	7	20	7	15				
Veh Ext.	3.0	5.0	3.0	5.0	3.0	5.0	3.0	5.0				
Yellow	3	3.7	3	4.6	3	3.7	3	4.6				
Red	1	2.8	1	3	1	2.8	1	3				
Walk		7		7		7		7				
Don't Walk		20		17		20		17				
Max 1	13	44	20	41	13	44	20	41				
Max 2												
Max 3												
Veh Recall		x				x						
Ped Recall												
Notes:	Sync Reference 3:15											



Intersection: JSP @ Esquesing Line

8 Phase Basic Timing Sheet												
	1	2	3	4	5	6	7	8	2 Ped	4 Ped	6 Ped	8 Ped
Phases in use		X	X	X		X	X	X	x	x	x	x
Direction		NB	WBLT	EB		SB	EBLT	WB				
Min Green		20	7	15		20	7	15				
Veh Ext.		5.0	3.0	5.0		5.0	3.0	5.0				
Yellow		3.7	3	4.2		3.7	3	4.2				
Red		2.8	1	2.4		2.8	1	2.4				
Walk		7		7		7		7				
Don't Walk		20		17		20		17				
Max 1		45	15	45		45	15	45				
Max 2												
Max 3												
Veh Recall				x				x				
Ped Recall												
Notes:	Signals to Rest on JSP											
	Sync Reference 3:15											

Appendix C

Level of Service Definitions

Level of Service Definitions

Two-Way Stop Controlled Intersections

Level of Service	Control Delay per Vehicle (seconds)	Interpretation
A	≤ 10	EXCELLENT. Large and frequent gaps in traffic on the main roadway. Queuing on the minor street is rare.
B	> 10 and ≤ 15	VERY GOOD. Many gaps exist in traffic on the main roadway. Queuing on the minor street is minimal.
C	> 15 and ≤ 25	GOOD. Fewer gaps exist in traffic on the main roadway. Delay on minor approach becomes more noticeable.
D	> 25 and ≤ 35	FAIR. Infrequent and shorter gaps in traffic on the main roadway. Queue lengths develop on the minor street.
E	> 35 and ≤ 50	POOR. Very infrequent gaps in traffic on the main roadway. Queue lengths become noticeable.
F	> 50	UNSATISFACTORY. Very few gaps in traffic on the main roadway. Excessive delay with significant queue lengths on the minor street.

Adapted from Highway Capacity Manual 2000, Transportation Research Board

Signalized Intersections

Level of Service	Control Delay per Vehicle (seconds)	Interpretation
A	≤ 10	EXCELLENT. Extremely favourable progression with most vehicles arriving during the green phase. Most vehicles do not stop and short cycle lengths may contribute to low delay.
B	> 10 and ≤ 20	VERY GOOD. Very good progression and/or short cycle lengths with slightly more vehicles stopping than LOS "A" causing slightly higher levels of average delay.
C	> 20 and ≤ 35	GOOD. Fair progression and longer cycle lengths lead to a greater number of vehicles stopping than LOS "B".
D	> 35 and ≤ 55	FAIR. Congestion becomes noticeable with higher average delays resulting from a combination of long cycle lengths, high volume-to-capacity ratios and unfavourable progression.
E	> 55 and ≤ 80	POOR. Lengthy delays values are indicative of poor progression, long cycle lengths and high volume-to-capacity ratios. Individual cycle failures are common with individual movement failures also common.
F	> 80	UNSATISFACTORY. Indicative of oversaturated conditions with vehicular demand greater than the capacity of the intersection.

Adapted from Highway Capacity Manual 2000, Transportation Research Board

Appendix D

Detailed Capacity Analysis

Lanes, Volumes, Timings
1: Boston Church Road & Private Access/Lawson Road

2025 Existing AM
05-08-2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	2	0	3	6	38	0	0	1	58	13	16
Future Volume (vph)	4	2	0	3	6	38	0	0	1	58	13	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.891			0.865			0.975	
Flt Protected		0.966			0.997						0.968	
Satd. Flow (prot)	0	1835	0	0	1096	0	0	1644	0	0	1440	0
Flt Permitted		0.966			0.997						0.968	
Satd. Flow (perm)	0	1835	0	0	1096	0	0	1644	0	0	1440	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		103.8			1335.9			195.8			624.0	
Travel Time (s)		7.5			96.2			14.1			44.9	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	0%	2%	34%	0%	64%	2%	2%	0%	37%	0%	0%
Adj. Flow (vph)	5	2	0	4	7	46	0	0	1	71	16	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	7	0	0	57	0	0	1	0	0	107	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 21.5% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

1: Boston Church Road & Private Access/Lawson Road

2025 Existing AM
05-08-2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	2	0	3	6	38	0	0	1	58	13	16
Future Volume (Veh/h)	4	2	0	3	6	38	0	0	1	58	13	16
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	5	2	0	4	7	46	0	0	1	71	16	20
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None						None					
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	218	169	26	170	178	0	36	1				
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	218	169	26	170	178	0	36	1				
tC, single (s)	7.1	6.5	6.2	7.4	6.5	6.8	4.1	4.5				
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.8	4.0	3.9	2.2	2.5				
p0 queue free %	99	100	100	99	99	95	100	95				
cM capacity (veh/h)	674	691	1050	698	683	928	1575	1420				
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	7	57	1	107								
Volume Left	5	4	0	71								
Volume Right	0	46	1	20								
cSH	678	870	1575	1420								
Volume to Capacity	0.01	0.07	0.00	0.05								
Queue Length 95th (m)	0.3	1.7	0.0	1.3								
Control Delay (s)	10.4	9.4	0.0	5.2								
Lane LOS	B	A		A								
Approach Delay (s)	10.4	9.4	0.0	5.2								
Approach LOS	B	A										
Intersection Summary												
Average Delay	6.8											
Intersection Capacity Utilization	21.5%			ICU Level of Service					A			
Analysis Period (min)	15											

Lanes, Volumes, Timings
2: Boston Church Road & James Snow Pkwy N

2025 Existing AM
05-08-2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	246	70	16	253	25	38	2	5	18	17	76
Future Volume (vph)	10	246	70	16	253	25	38	2	5	18	17	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		0.0	70.0		0.0	58.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	95.0			95.0			50.0			65.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.967			0.987			0.893			0.877	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	602	3310	0	1367	3063	0	1121	1881	0	1299	3166	0
Flt Permitted	0.568			0.536			0.555			0.753		
Satd. Flow (perm)	360	3310	0	772	3063	0	655	1881	0	1029	3166	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		32			9			639			83	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		394.5			723.5			186.0			211.6	
Travel Time (s)		28.4			52.1			13.4			15.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.91	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	200%	7%	0%	32%	14%	40%	61%	0%	100%	39%	0%	0%
Adj. Flow (vph)	11	267	76	17	275	27	42	2	5	20	18	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	343	0	17	302	0	42	7	0	20	101	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0		7.0	20.0		7.0	15.0		7.0	15.0	
Minimum Split (s)	11.5	33.5		11.5	33.5		11.5	31.6		11.5	38.6	
Total Split (s)	13.0	44.0		13.0	44.0		20.0	41.0		20.0	41.0	
Total Split (%)	11.0%	37.3%		11.0%	37.3%		16.9%	34.7%		16.9%	34.7%	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.6		3.0	4.6	
All-Red Time (s)	1.0	2.8		1.0	2.8		1.0	3.0		1.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.5		4.0	6.5		4.0	7.6		4.0	7.6	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min		None	Min		None	Min		None	None	
Act Effct Green (s)	78.9	73.4		79.3	75.4		29.4	21.2		24.7	15.0	
Actuated g/C Ratio	0.67	0.62		0.67	0.64		0.25	0.18		0.21	0.13	
v/c Ratio	0.04	0.17		0.03	0.15		0.21	0.01		0.09	0.21	
Control Delay	8.1	10.3		7.8	10.0		34.6	0.0		32.0	15.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	8.1	10.3		7.8	10.0		34.6	0.0		32.0	15.0	
LOS	A	B		A	A		C	A		C	B	
Approach Delay		10.2			9.9			29.6			17.8	
Approach LOS		B			A			C			B	
Queue Length 50th (m)	0.8	14.4		1.3	13.6		7.8	0.0		3.6	2.0	

Lanes, Volumes, Timings
2: Boston Church Road & James Snow Pkwy N

2025 Existing AM
05-08-2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (m)	3.3	29.2		4.2	28.3		16.9	0.0		9.8	10.5	
Internal Link Dist (m)		370.5			699.5			162.0			187.6	
Turn Bay Length (m)	70.0			70.0			58.0			60.0		
Base Capacity (vph)	260	2070		566	1959		228	990		294	955	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.04	0.17		0.03	0.15		0.18	0.01		0.07	0.11	

Intersection Summary

Area Type: Other

Cycle Length: 118

Actuated Cycle Length: 118

Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.21

Intersection Signal Delay: 12.3

Intersection LOS: B

Intersection Capacity Utilization 40.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: Boston Church Road & James Snow Pkwy N

 Ø1	 Ø2 (R)	 Ø3	 Ø4
13 s	44 s	20 s	41 s
 Ø5	 Ø6	 Ø7	 Ø8
13 s	44 s	20 s	41 s

Lanes, Volumes, Timings
4: Esquesing Line & Lawson Road

2025 Existing AM
05-08-2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	15	28	4	21	12	60	172	20	69	362	54
Future Volume (vph)	1	15	28	4	21	12	60	172	20	69	362	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	24.0		0.0	41.0		0.0	44.0		0.0	33.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			79.0			80.0			72.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.903			0.947			0.985			0.980	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1114	0	1805	1344	0	1641	1804	0	1719	1796	0
Flt Permitted							0.495			0.624		
Satd. Flow (perm)	1900	1114	0	1900	1344	0	855	1804	0	1129	1796	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31			13			10			13	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1335.9			344.9			647.3			258.0	
Travel Time (s)		96.2			24.8			46.6			18.6	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	74%	43%	0%	43%	17%	10%	3%	10%	5%	3%	8%
Adj. Flow (vph)	1	17	31	4	24	13	67	193	22	78	407	61
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	48	0	4	37	0	67	215	0	78	468	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	5.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	22.5	22.5		31.0	31.0		31.0	31.0		22.5	22.5	
Total Split (s)	34.0	34.0		34.0	34.0		34.0	34.0		34.0	34.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	10.2	10.2		8.1	8.1		38.2	38.2		38.2	38.2	
Actuated g/C Ratio	0.22	0.22		0.17	0.17		0.82	0.82		0.82	0.82	
v/c Ratio	0.00	0.18		0.01	0.15		0.10	0.14		0.08	0.32	
Control Delay	16.0	11.0		15.8	13.7		4.5	3.7		4.2	4.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	16.0	11.0		15.8	13.7		4.5	3.7		4.2	4.5	
LOS	B	B		B	B		A	A		A	A	
Approach Delay		11.1			13.9			3.9			4.5	
Approach LOS		B			B			A			A	
Queue Length 50th (m)	0.1	0.7		0.2	1.2		0.0	0.0		0.0	0.0	

Lanes, Volumes, Timings
4: Esquesing Line & Lawson Road

2025 Existing AM
05-08-2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (m)	1.0	8.1		2.2	7.8		7.1	16.2		7.6	38.4	
Internal Link Dist (m)		1311.9			320.9			623.3			234.0	
Turn Bay Length (m)	24.0			41.0			44.0			33.0		
Base Capacity (vph)	1240	737		1240	881		704	1488		930	1482	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.00	0.07		0.00	0.04		0.10	0.14		0.08	0.32	

Intersection Summary

Area Type: Other

Cycle Length: 68

Actuated Cycle Length: 46.4

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.32

Intersection Signal Delay: 5.1

Intersection LOS: A

Intersection Capacity Utilization 58.2%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 4: Esquesing Line & Lawson Road

 Ø2	 Ø4
34 s	34 s
 Ø6	 Ø8
34 s	34 s

Intersection: 1: Boston Church Road & Private Access/Lawson Road

Movement	EB	WB
Directions Served	LTR	LTR
Maximum Queue (m)	9.1	23.0
Average Queue (m)	1.9	11.0
95th Queue (m)	8.0	22.6
Link Distance (m)	95.4	1316.6
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Boston Church Road & James Snow Pkwy N

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	L	T
Maximum Queue (m)	26.5	28.7	16.7	17.6	28.1	31.7	34.7	4.0	17.6	8.3
Average Queue (m)	6.3	11.8	5.1	2.5	9.0	9.3	8.3	0.2	4.1	1.9
95th Queue (m)	19.2	24.2	13.2	10.3	19.9	22.8	23.4	2.0	13.2	7.1
Link Distance (m)		375.7	375.7		704.4	704.4		158.5		192.8
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (m)	70.0			70.0			58.0		60.0	
Storage Blk Time (%)							0			
Queuing Penalty (veh)							0			

Intersection: 4: Esquesing Line & Lawson Road

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (m)	1.8	30.5	8.9	22.9	26.6	24.7	16.5	49.8
Average Queue (m)	0.1	10.5	1.0	7.9	9.5	8.5	6.2	18.1
95th Queue (m)	1.2	24.6	5.6	19.5	20.9	21.2	14.9	42.0
Link Distance (m)		1316.6		334.3		636.8		247.4
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)	24.0		41.0		44.0		33.0	
Storage Blk Time (%)		1						1
Queuing Penalty (veh)		0						1

Network Summary

Network wide Queuing Penalty: 1

Lanes, Volumes, Timings
1: Boston Church Road & Private Access/Lawson Road

2025 Existing PM
05-08-2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	37	23	5	31	59	1	6	0	42	20	16
Future Volume (vph)	30	37	23	5	31	59	1	6	0	42	20	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.966			0.916						0.972	
Flt Protected		0.984			0.997			0.992			0.974	
Satd. Flow (prot)	0	1806	0	0	1455	0	0	1885	0	0	1372	0
Flt Permitted		0.984			0.997			0.992			0.974	
Satd. Flow (perm)	0	1806	0	0	1455	0	0	1885	0	0	1372	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		103.8			1335.9			195.8			624.0	
Travel Time (s)		7.5			96.2			14.1			44.9	
Peak Hour Factor	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Heavy Vehicles (%)	0%	0%	0%	0%	0%	31%	0%	0%	2%	58%	0%	0%
Adj. Flow (vph)	54	66	41	9	55	105	2	11	0	75	36	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	161	0	0	169	0	0	13	0	0	140	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 29.4% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

1: Boston Church Road & Private Access/Lawson Road

2025 Existing PM
05-08-2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	37	23	5	31	59	1	6	0	42	20	16
Future Volume (Veh/h)	30	37	23	5	31	59	1	6	0	42	20	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Hourly flow rate (vph)	54	66	41	9	55	105	2	11	0	75	36	29
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None								None			
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	348	216	50	290	230	11	65			11		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	348	216	50	290	230	11	65			11		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.5	4.1			4.7		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.6	2.2			2.7		
p0 queue free %	89	90	96	98	91	89	100			94		
cM capacity (veh/h)	487	646	1023	564	634	991	1550			1309		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	161	169	13	140								
Volume Left	54	9	2	75								
Volume Right	41	105	0	29								
cSH	636	810	1550	1309								
Volume to Capacity	0.25	0.21	0.00	0.06								
Queue Length 95th (m)	8.0	6.3	0.0	1.5								
Control Delay (s)	12.6	10.6	1.1	4.5								
Lane LOS	B	B	A	A								
Approach Delay (s)	12.6	10.6	1.1	4.5								
Approach LOS	B	B										
Intersection Summary												
Average Delay			9.2									
Intersection Capacity Utilization			29.4%	ICU Level of Service					A			
Analysis Period (min)			15									

Lanes, Volumes, Timings
2: Boston Church Road & James Snow Pkwy N

2025 Existing PM

05-08-2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	283	56	20	726	38	72	29	23	23	24	28
Future Volume (vph)	85	283	56	20	726	38	72	29	23	23	24	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		0.0	70.0		0.0	58.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	95.0			95.0			50.0			65.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.975			0.993			0.934			0.920	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3075	0	1128	3366	0	1410	2736	0	1337	3179	0
Flt Permitted	0.263			0.532			0.574			0.718		
Satd. Flow (perm)	500	3075	0	632	3366	0	852	2736	0	1011	3179	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21			5			25			30	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		394.5			723.5			186.0			211.6	
Travel Time (s)		28.4			52.1			13.4			15.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	9%	42%	60%	6%	16%	28%	0%	53%	35%	5%	4%
Adj. Flow (vph)	92	308	61	22	789	41	78	32	25	25	26	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	92	369	0	22	830	0	78	57	0	25	56	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0		7.0	20.0		7.0	15.0		7.0	15.0	
Minimum Split (s)	11.5	33.5		11.5	33.5		11.5	31.6		11.5	38.6	
Total Split (s)	13.0	44.0		13.0	44.0		20.0	41.0		20.0	41.0	
Total Split (%)	11.0%	37.3%		11.0%	37.3%		16.9%	34.7%		16.9%	34.7%	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.6		3.0	4.6	
All-Red Time (s)	1.0	2.8		1.0	2.8		1.0	3.0		1.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.5		4.0	6.5		4.0	7.6		4.0	7.6	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min		None	Min		None	Min		None	None	
Act Effct Green (s)	78.3	72.1		74.3	64.7		30.6	20.0		24.9	15.0	
Actuated g/C Ratio	0.66	0.61		0.63	0.55		0.26	0.17		0.21	0.13	
v/c Ratio	0.22	0.20		0.05	0.45		0.29	0.12		0.11	0.13	
Control Delay	9.2	11.7		8.6	18.0		34.8	27.0		31.3	26.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.2	11.7		8.6	18.0		34.8	27.0		31.3	26.3	
LOS	A	B		A	B		C	C		C	C	
Approach Delay		11.2			17.8			31.5			27.8	
Approach LOS		B			B			C			C	
Queue Length 50th (m)	7.5	17.0		1.7	62.5		14.6	3.5		4.5	2.9	

Lanes, Volumes, Timings
2: Boston Church Road & James Snow Pkwy N

2025 Existing PM
05-08-2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (m)	15.4	34.8		5.5	90.0		26.2	9.7		11.0	9.5	
Internal Link Dist (m)		370.5			699.5			162.0			187.6	
Turn Bay Length (m)	70.0			70.0			58.0			60.0		
Base Capacity (vph)	433	1886		445	1846		298	792		303	921	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.21	0.20		0.05	0.45		0.26	0.07		0.08	0.06	

Intersection Summary

Area Type: Other

Cycle Length: 118

Actuated Cycle Length: 118

Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 17.6

Intersection LOS: B

Intersection Capacity Utilization 54.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: Boston Church Road & James Snow Pkwy N

 Ø1	 Ø2 (R)	 Ø3	 Ø4
13 s	44 s	20 s	41 s
 Ø5	 Ø6	 Ø7	 Ø8
13 s	44 s	20 s	41 s

Lanes, Volumes, Timings
4: Esquesing Line & Lawson Road

2025 Existing PM

05-08-2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	46	146	8	21	79	49	345	12	48	364	28
Future Volume (vph)	38	46	146	8	21	79	49	345	12	48	364	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	24.0		0.0	41.0		0.0	44.0		0.0	33.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			79.0			80.0			72.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.886			0.882			0.995			0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1703	1437	0	1805	1462	0	1656	1832	0	1517	1764	0
Flt Permitted	0.687			0.627			0.494			0.527		
Satd. Flow (perm)	1231	1437	0	1191	1462	0	861	1832	0	841	1764	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		159			86			3			7	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1335.9			344.9			647.3			258.0	
Travel Time (s)		96.2			24.8			46.6			18.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	40%	10%	0%	58%	3%	9%	3%	9%	19%	4%	40%
Adj. Flow (vph)	41	50	159	9	23	86	53	375	13	52	396	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	209	0	9	109	0	53	388	0	52	426	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	5.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	22.5	22.5		31.0	31.0		31.0	31.0		22.5	22.5	
Total Split (s)	34.0	34.0		34.0	34.0		34.0	34.0		34.0	34.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	10.8	10.8		10.8	10.8		28.0	28.0		28.0	28.0	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.55	0.55		0.55	0.55	
v/c Ratio	0.16	0.49		0.04	0.29		0.11	0.38		0.11	0.44	
Control Delay	17.8	10.1		16.0	8.8		6.6	8.1		6.6	8.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	17.8	10.1		16.0	8.8		6.6	8.1		6.6	8.6	
LOS	B	B		B	A		A	A		A	A	
Approach Delay		11.3			9.3			7.9			8.4	
Approach LOS		B			A			A			A	
Queue Length 50th (m)	3.2	3.9		0.7	1.8		2.0	17.3		2.0	19.5	

Lanes, Volumes, Timings
4: Esquesing Line & Lawson Road

2025 Existing PM
05-08-2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (m)	9.5	18.1		3.5	11.6		7.1	37.6		7.0	42.7	
Internal Link Dist (m)		1311.9			320.9			623.3			234.0	
Turn Bay Length (m)	24.0			41.0			44.0			33.0		
Base Capacity (vph)	679	864		656	845		475	1012		463	976	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.06	0.24		0.01	0.13		0.11	0.38		0.11	0.44	

Intersection Summary

Area Type: Other

Cycle Length: 68

Actuated Cycle Length: 50.8

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.49

Intersection Signal Delay: 8.9

Intersection LOS: A

Intersection Capacity Utilization 59.8%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 4: Esquesing Line & Lawson Road

 Ø2	 Ø4
34 s	34 s
 Ø6	 Ø8
34 s	34 s

Intersection: 1: Boston Church Road & Private Access/Lawson Road

Movement	EB	WB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (m)	15.0	23.7	4.8
Average Queue (m)	9.0	12.8	0.2
95th Queue (m)	13.5	21.2	2.5
Link Distance (m)	95.4	1316.6	605.4
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Boston Church Road & James Snow Pkwy N

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	TR	L	T	TR
Maximum Queue (m)	25.8	36.5	32.7	15.8	58.8	68.0	31.6	8.2	10.1	20.8	16.1	1.6
Average Queue (m)	9.3	13.2	8.9	3.7	28.9	32.6	12.0	2.6	1.8	5.0	3.9	0.1
95th Queue (m)	19.8	27.8	23.9	12.0	50.6	57.4	26.8	8.1	7.4	14.6	11.6	1.1
Link Distance (m)		375.7	375.7		704.4	704.4		158.5	158.5		192.8	192.8
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	70.0			70.0			58.0			60.0		
Storage Blk Time (%)						0						
Queuing Penalty (veh)						0						

Intersection: 4: Esquesing Line & Lawson Road

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (m)	26.7	48.3	9.0	29.6	20.3	52.7	25.7	59.7
Average Queue (m)	7.1	20.8	1.9	12.2	8.1	25.4	9.4	26.6
95th Queue (m)	18.7	39.2	7.6	24.6	18.4	42.6	21.6	47.8
Link Distance (m)		1316.6		334.3		636.8		247.4
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)	24.0		41.0		44.0		33.0	
Storage Blk Time (%)	0	5		0		0	0	3
Queuing Penalty (veh)	1	2		0		0	0	1

Network Summary

Network wide Queuing Penalty: 4

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	2	0	3	6	40	0	0	1	60	13	16
Future Volume (vph)	4	2	0	3	6	40	0	0	1	60	13	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.890			0.865			0.975	
Flt Protected		0.966			0.997						0.968	
Satd. Flow (prot)	0	1835	0	0	1091	0	0	1644	0	0	1437	0
Flt Permitted		0.966			0.997						0.968	
Satd. Flow (perm)	0	1835	0	0	1091	0	0	1644	0	0	1437	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		51.0			1335.9			195.8			115.7	
Travel Time (s)		3.7			96.2			14.1			8.3	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	0%	2%	34%	0%	64%	2%	2%	0%	37%	0%	0%
Adj. Flow (vph)	5	2	0	4	7	49	0	0	1	73	16	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	7	0	0	60	0	0	1	0	0	109	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 21.6%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis 2025 Existing + Site Generated Traffic AM

1: Boston Church Road & Private Access/Lawson Road

05-22-2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	2	0	3	6	40	0	0	1	60	13	16
Future Volume (Veh/h)	4	2	0	3	6	40	0	0	1	60	13	16
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	5	2	0	4	7	49	0	0	1	73	16	20
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	225	173	26	174	182	0	36				1	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	225	173	26	174	182	0	36				1	
tC, single (s)	7.1	6.5	6.2	7.4	6.5	6.8	4.1				4.5	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.8	4.0	3.9	2.2				2.5	
p0 queue free %	99	100	100	99	99	95	100				95	
cM capacity (veh/h)	663	687	1050	693	678	928	1575				1420	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	7	60	1	109								
Volume Left	5	4	0	73								
Volume Right	0	49	1	20								
cSH	670	871	1575	1420								
Volume to Capacity	0.01	0.07	0.00	0.05								
Queue Length 95th (m)	0.3	1.8	0.0	1.3								
Control Delay (s)	10.4	9.4	0.0	5.3								
Lane LOS	B	A		A								
Approach Delay (s)	10.4	9.4	0.0	5.3								
Approach LOS	B	A										
Intersection Summary												
Average Delay				6.9								
Intersection Capacity Utilization				21.6%	ICU Level of Service				A			
Analysis Period (min)				15								

Lanes, Volumes, Timings
2: Boston Church Road & James Snow Pkwy N

2025 Existing + Site Generated Traffic AM
05-22-2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	246	80	29	253	25	48	5	17	18	19	76
Future Volume (vph)	10	246	80	29	253	25	48	5	17	18	19	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		0.0	70.0		0.0	58.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	95.0			95.0			50.0			65.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.963			0.987			0.883			0.880	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	602	3302	0	1367	3063	0	1121	1788	0	1299	3177	0
Flt Permitted	0.568			0.518			0.553			0.742		
Satd. Flow (perm)	360	3302	0	746	3063	0	653	1788	0	1014	3177	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		39			9			18			83	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		394.5			723.5			186.0			211.6	
Travel Time (s)		28.4			52.1			13.4			15.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.91	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	200%	7%	0%	32%	14%	40%	61%	0%	100%	39%	0%	0%
Adj. Flow (vph)	11	267	87	32	275	27	53	5	18	20	21	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	354	0	32	302	0	53	23	0	20	104	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0		7.0	20.0		7.0	15.0		7.0	15.0	
Minimum Split (s)	11.5	33.5		11.5	33.5		11.5	31.6		11.5	38.6	
Total Split (s)	13.0	44.0		13.0	44.0		20.0	41.0		20.0	41.0	
Total Split (%)	11.0%	37.3%		11.0%	37.3%		16.9%	34.7%		16.9%	34.7%	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.6		3.0	4.6	
All-Red Time (s)	1.0	2.8		1.0	2.8		1.0	3.0		1.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.5		4.0	6.5		4.0	7.6		4.0	7.6	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min		None	Min		None	Min		None	None	
Act Effct Green (s)	77.1	70.2		78.7	74.6		30.5	22.0		24.7	15.0	
Actuated g/C Ratio	0.65	0.59		0.67	0.63		0.26	0.19		0.21	0.13	
v/c Ratio	0.04	0.18		0.06	0.16		0.25	0.07		0.09	0.22	
Control Delay	8.6	11.6		8.2	10.4		34.8	20.9		31.2	15.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	8.6	11.6		8.2	10.4		34.8	20.9		31.2	15.6	
LOS	A	B		A	B		C	C		C	B	
Approach Delay		11.5			10.2			30.5			18.2	
Approach LOS		B			B			C			B	
Queue Length 50th (m)	0.9	19.5		2.5	14.0		9.8	0.4		3.6	2.4	

Lanes, Volumes, Timings
2: Boston Church Road & James Snow Pkwy N

2025 Existing + Site Generated Traffic AM
05-22-2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (m)	3.4	31.1		6.8	29.1		19.8	4.6		9.6	11.0	
Internal Link Dist (m)		370.5			699.5			162.0			187.6	
Turn Bay Length (m)	70.0			70.0			58.0			60.0		
Base Capacity (vph)	256	1980		546	1939		232	519		297	958	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.04	0.18		0.06	0.16		0.23	0.04		0.07	0.11	

Intersection Summary

Area Type: Other

Cycle Length: 118

Actuated Cycle Length: 118

Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.25

Intersection Signal Delay: 13.6

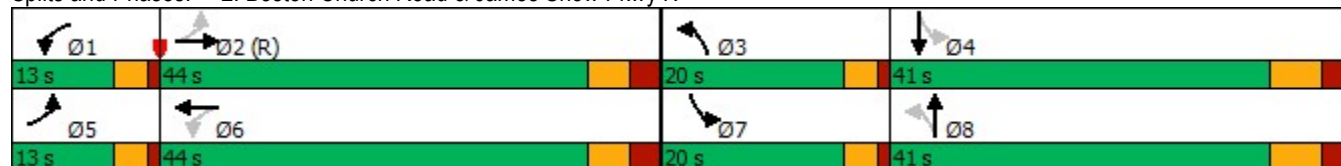
Intersection LOS: B

Intersection Capacity Utilization 48.3%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: Boston Church Road & James Snow Pkwy N



Lanes, Volumes, Timings
4: Esquesing Line & Lawson Road

2025 Existing + Site Generated Traffic AM

05-22-2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	15	30	4	21	12	62	172	20	69	362	54
Future Volume (vph)	1	15	30	4	21	12	62	172	20	69	362	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	24.0		0.0	41.0		0.0	44.0		0.0	33.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			79.0			80.0			72.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.900			0.947			0.985			0.980	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1115	0	1805	1344	0	1641	1804	0	1719	1796	0
Flt Permitted							0.495			0.624		
Satd. Flow (perm)	1900	1115	0	1900	1344	0	855	1804	0	1129	1796	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		34			13			10			13	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1335.9			344.9			647.3			253.0	
Travel Time (s)		96.2			24.8			46.6			18.2	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	74%	43%	0%	43%	17%	10%	3%	10%	5%	3%	8%
Adj. Flow (vph)	1	17	34	4	24	13	70	193	22	78	407	61
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	51	0	4	37	0	70	215	0	78	468	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	5.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	22.5	22.5		31.0	31.0		31.0	31.0		22.5	22.5	
Total Split (s)	34.0	34.0		34.0	34.0		34.0	34.0		34.0	34.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	10.2	10.2		8.1	8.1		38.2	38.2		38.2	38.2	
Actuated g/C Ratio	0.22	0.22		0.17	0.17		0.82	0.82		0.82	0.82	
v/c Ratio	0.00	0.19		0.01	0.15		0.10	0.14		0.08	0.32	
Control Delay	16.0	10.8		15.8	13.7		4.5	3.7		4.2	4.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	16.0	10.8		15.8	13.7		4.5	3.7		4.2	4.5	
LOS	B	B		B	B		A	A		A	A	
Approach Delay		10.9			13.9			3.9			4.5	
Approach LOS		B			B			A			A	
Queue Length 50th (m)	0.1	0.7		0.2	1.2		0.0	0.0		0.0	0.0	

Lanes, Volumes, Timings
4: Esquesing Line & Lawson Road

2025 Existing + Site Generated Traffic AM
05-22-2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (m)	1.0	8.3		2.2	7.8		7.4	16.2		7.6	38.4	
Internal Link Dist (m)		1311.9			320.9			623.3			229.0	
Turn Bay Length (m)	24.0			41.0			44.0			33.0		
Base Capacity (vph)	1240	739		1240	881		704	1488		930	1482	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.00	0.07		0.00	0.04		0.10	0.14		0.08	0.32	

Intersection Summary

Area Type: Other

Cycle Length: 68

Actuated Cycle Length: 46.4

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.32

Intersection Signal Delay: 5.1

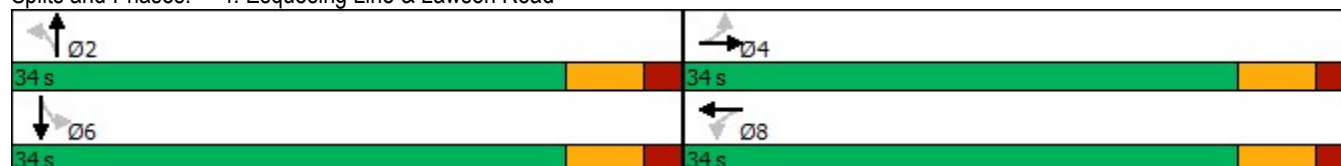
Intersection LOS: A

Intersection Capacity Utilization 58.2%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 4: Esquesing Line & Lawson Road



Lanes, Volumes, Timings
6: Boston Church Road & Site Access

2025 Existing + Site Generated Traffic AM
05-22-2025

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	24	44	2	24	95
Future Volume (vph)	2	24	44	2	24	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.875		0.995			
Flt Protected	0.996					0.990
Satd. Flow (prot)	1623	0	1853	0	0	1844
Flt Permitted	0.996					0.990
Satd. Flow (perm)	1623	0	1853	0	0	1844
Link Speed (k/h)	50		50			50
Link Distance (m)	82.2		115.7			508.3
Travel Time (s)	5.9		8.3			36.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	26	48	2	26	103
Shared Lane Traffic (%)						
Lane Group Flow (vph)	28	0	50	0	0	129
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	23.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis 2025 Existing + Site Generated Traffic AM

6: Boston Church Road & Site Access

05-22-2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	24	44	2	24	95
Future Volume (Veh/h)	2	24	44	2	24	95
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	26	48	2	26	103
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	204	49			50	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	204	49			50	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			98	
cM capacity (veh/h)	771	1020			1557	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	28	50	129			
Volume Left	2	0	26			
Volume Right	26	2	0			
cSH	997	1700	1557			
Volume to Capacity	0.03	0.03	0.02			
Queue Length 95th (m)	0.7	0.0	0.4			
Control Delay (s)	8.7	0.0	1.6			
Lane LOS	A		A			
Approach Delay (s)	8.7	0.0	1.6			
Approach LOS	A					
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilization			23.0%	ICU Level of Service		A
Analysis Period (min)			15			

Intersection: 1: Boston Church Road & Private Access/Lawson Road

Movement	EB	WB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (m)	8.8	24.9	4.7
Average Queue (m)	1.5	11.7	0.2
95th Queue (m)	6.9	23.8	3.3
Link Distance (m)	42.3	100.2	96.7
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Boston Church Road & James Snow Pkwy N

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	TR	L	T	TR
Maximum Queue (m)	23.6	33.1	27.6	23.2	26.5	36.0	41.3	5.5	1.6	16.1	13.4	3.4
Average Queue (m)	4.8	12.5	6.4	4.8	8.7	10.1	11.4	0.4	0.1	3.4	4.0	0.1
95th Queue (m)	16.4	25.2	17.2	15.6	19.7	26.4	29.2	2.7	1.1	11.7	11.2	1.8
Link Distance (m)		375.7	375.7		704.4	704.4		158.5	158.5		192.8	192.8
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	70.0			70.0			58.0			60.0		
Storage Blk Time (%)							0					
Queuing Penalty (veh)							0					

Intersection: 4: Esquesing Line & Lawson Road

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (m)	1.6	27.6	8.8	25.5	22.6	27.3	21.0	52.3
Average Queue (m)	0.1	9.9	1.1	8.1	8.4	10.4	6.7	18.9
95th Queue (m)	1.3	22.7	5.7	20.8	18.9	24.2	16.9	40.6
Link Distance (m)		1199.0		334.3		636.8		242.4
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)	24.0		41.0		44.0		33.0	
Storage Blk Time (%)		1					0	1
Queuing Penalty (veh)		0					0	1

Intersection: 5: Lawson Road & Site Access

Movement	SB
Directions Served	LR
Maximum Queue (m)	8.8
Average Queue (m)	0.8
95th Queue (m)	5.1
Link Distance (m)	73.6
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Boston Church Road & Site Access

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (m)	11.5	3.7
Average Queue (m)	5.6	0.2
95th Queue (m)	12.7	2.3
Link Distance (m)	73.6	493.3
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 1

Lanes, Volumes, Timings

2025 Existing + Site Generated Traffic PM

1: Boston Church Road & Private Access/Lawson Road

05-22-2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	37	23	5	31	64	1	6	0	44	20	16
Future Volume (vph)	30	37	23	5	31	64	1	6	0	44	20	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.966			0.914						0.973	
Flt Protected		0.984			0.997			0.992			0.973	
Satd. Flow (prot)	0	1806	0	0	1445	0	0	1885	0	0	1365	0
Flt Permitted		0.984			0.997			0.992			0.973	
Satd. Flow (perm)	0	1806	0	0	1445	0	0	1885	0	0	1365	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		51.0			1335.9			195.8			115.7	
Travel Time (s)		3.7			96.2			14.1			8.3	
Peak Hour Factor	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Heavy Vehicles (%)	0%	0%	0%	0%	0%	31%	0%	0%	2%	58%	0%	0%
Adj. Flow (vph)	54	66	41	9	55	114	2	11	0	79	36	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	161	0	0	178	0	0	13	0	0	144	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 29.5%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis 2025 Existing + Site Generated Traffic PM

1: Boston Church Road & Private Access/Lawson Road

05-22-2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	37	23	5	31	64	1	6	0	44	20	16
Future Volume (Veh/h)	30	37	23	5	31	64	1	6	0	44	20	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Hourly flow rate (vph)	54	66	41	9	55	114	2	11	0	79	36	29
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	365	224	50	298	238	11	65			11		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	365	224	50	298	238	11	65			11		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.5	4.1			4.7		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.6	2.2			2.7		
p0 queue free %	88	90	96	98	91	89	100			94		
cM capacity (veh/h)	468	637	1023	555	625	991	1550			1309		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	161	178	13	144								
Volume Left	54	9	2	79								
Volume Right	41	114	0	29								
cSH	622	812	1550	1309								
Volume to Capacity	0.26	0.22	0.00	0.06								
Queue Length 95th (m)	8.2	6.7	0.0	1.5								
Control Delay (s)	12.8	10.7	1.1	4.6								
Lane LOS	B	B	A	A								
Approach Delay (s)	12.8	10.7	1.1	4.6								
Approach LOS	B	B										
Intersection Summary												
Average Delay			9.3									
Intersection Capacity Utilization			29.5%	ICU Level of Service					A			
Analysis Period (min)			15									

Lanes, Volumes, Timings
2: Boston Church Road & James Snow Pkwy N

2025 Existing + Site Generated Traffic PM

05-22-2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	283	65	30	726	38	82	32	35	23	28	28
Future Volume (vph)	85	283	65	30	726	38	82	32	35	23	28	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		0.0	70.0		0.0	58.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	95.0			95.0			50.0			65.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.972			0.993			0.922			0.925	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3046	0	1128	3366	0	1410	2609	0	1337	3195	0
Flt Permitted	0.264			0.527			0.571			0.707		
Satd. Flow (perm)	502	3046	0	626	3366	0	848	2609	0	995	3195	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			5			38			30	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		394.5			723.5			186.0			211.6	
Travel Time (s)		28.4			52.1			13.4			15.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	9%	42%	60%	6%	16%	28%	0%	53%	35%	5%	4%
Adj. Flow (vph)	92	308	71	33	789	41	89	35	38	25	30	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	92	379	0	33	830	0	89	73	0	25	60	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0		7.0	20.0		7.0	15.0		7.0	15.0	
Minimum Split (s)	11.5	33.5		11.5	33.5		11.5	31.6		11.5	38.6	
Total Split (s)	13.0	44.0		13.0	44.0		20.0	41.0		20.0	41.0	
Total Split (%)	11.0%	37.3%		11.0%	37.3%		16.9%	34.7%		16.9%	34.7%	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.6		3.0	4.6	
All-Red Time (s)	1.0	2.8		1.0	2.8		1.0	3.0		1.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.5		4.0	6.5		4.0	7.6		4.0	7.6	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min		None	Min		None	Min		None	None	
Act Effct Green (s)	76.8	69.0		74.0	64.0		31.3	20.6		24.8	15.0	
Actuated g/C Ratio	0.65	0.58		0.63	0.54		0.27	0.17		0.21	0.13	
v/c Ratio	0.22	0.21		0.08	0.45		0.32	0.15		0.11	0.14	
Control Delay	9.6	13.1		9.1	18.5		35.1	23.3		30.8	27.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.6	13.1		9.1	18.5		35.1	23.3		30.8	27.4	
LOS	A	B		A	B		D	C		C	C	
Approach Delay		12.5			18.2			29.8			28.4	
Approach LOS		B			B			C			C	
Queue Length 50th (m)	7.6	22.8		2.7	63.4		16.6	3.8		4.5	3.4	

Lanes, Volumes, Timings
2: Boston Church Road & James Snow Pkwy N

2025 Existing + Site Generated Traffic PM

05-22-2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (m)	15.8	36.6		7.4	91.7		29.2	10.7		10.8	10.1	
Internal Link Dist (m)		370.5			699.5			162.0			187.6	
Turn Bay Length (m)	70.0			70.0			58.0			60.0		
Base Capacity (vph)	429	1792		439	1829		302	765		304	925	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.21	0.21		0.08	0.45		0.29	0.10		0.08	0.06	

Intersection Summary

Area Type: Other

Cycle Length: 118

Actuated Cycle Length: 118

Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 18.2

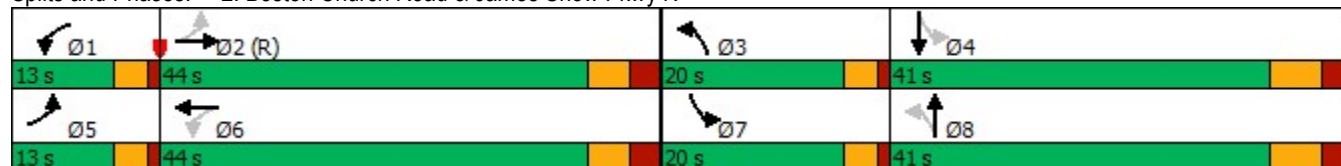
Intersection LOS: B

Intersection Capacity Utilization 54.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: Boston Church Road & James Snow Pkwy N



Lanes, Volumes, Timings
4: Esquesing Line & Lawson Road

2025 Existing + Site Generated Traffic PM

05-22-2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	46	148	8	21	79	54	345	12	48	364	28
Future Volume (vph)	38	46	148	8	21	79	54	345	12	48	364	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	24.0		0.0	41.0		0.0	44.0		0.0	33.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	50.0			79.0			80.0			72.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.886			0.882			0.995			0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1703	1437	0	1805	1462	0	1656	1832	0	1517	1764	0
Flt Permitted	0.687			0.626			0.494			0.527		
Satd. Flow (perm)	1231	1437	0	1189	1462	0	861	1832	0	841	1764	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		161			86			3			7	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1335.9			344.9			647.3			253.0	
Travel Time (s)		96.2			24.8			46.6			18.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	40%	10%	0%	58%	3%	9%	3%	9%	19%	4%	40%
Adj. Flow (vph)	41	50	161	9	23	86	59	375	13	52	396	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	211	0	9	109	0	59	388	0	52	426	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	5.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	22.5	22.5		31.0	31.0		31.0	31.0		22.5	22.5	
Total Split (s)	34.0	34.0		34.0	34.0		34.0	34.0		34.0	34.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	10.8	10.8		10.8	10.8		28.0	28.0		28.0	28.0	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.55	0.55		0.55	0.55	
v/c Ratio	0.16	0.49		0.04	0.29		0.12	0.38		0.11	0.44	
Control Delay	17.8	10.0		16.0	8.8		6.8	8.1		6.7	8.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	17.8	10.0		16.0	8.8		6.8	8.1		6.7	8.6	
LOS	B	B		B	A		A	A		A	A	
Approach Delay		11.3			9.3			7.9			8.4	
Approach LOS		B			A			A			A	
Queue Length 50th (m)	3.2	3.9		0.7	1.8		2.3	17.3		2.0	19.5	

Lanes, Volumes, Timings
4: Esquesing Line & Lawson Road

2025 Existing + Site Generated Traffic PM

05-22-2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (m)	9.5	18.1		3.5	11.6		7.7	37.7		7.0	42.8	
Internal Link Dist (m)		1311.9			320.9			623.3			229.0	
Turn Bay Length (m)	24.0			41.0			44.0			33.0		
Base Capacity (vph)	679	864		655	844		475	1012		463	976	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.06	0.24		0.01	0.13		0.12	0.38		0.11	0.44	

Intersection Summary

Area Type: Other

Cycle Length: 68

Actuated Cycle Length: 50.8

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.49

Intersection Signal Delay: 8.9

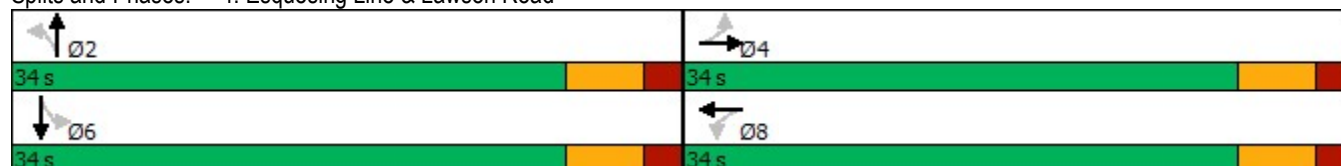
Intersection LOS: A

Intersection Capacity Utilization 59.9%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 4: Esquesing Line & Lawson Road



Lanes, Volumes, Timings
6: Boston Church Road & Site Access

2025 Existing + Site Generated Traffic PM

05-22-2025

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	24	110	5	21	89
Future Volume (vph)	2	24	110	5	21	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.875		0.995			
Flt Protected	0.996					0.991
Satd. Flow (prot)	1623	0	1853	0	0	1846
Flt Permitted	0.996					0.991
Satd. Flow (perm)	1623	0	1853	0	0	1846
Link Speed (k/h)	50		50			50
Link Distance (m)	82.2		115.7			508.3
Travel Time (s)	5.9		8.3			36.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	26	120	5	23	97
Shared Lane Traffic (%)						
Lane Group Flow (vph)	28	0	125	0	0	120
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	22.5%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis 2025 Existing + Site Generated Traffic PM

6: Boston Church Road & Site Access

05-22-2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	24	110	5	21	89
Future Volume (Veh/h)	2	24	110	5	21	89
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	26	120	5	23	97
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	266	122			125	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	266	122			125	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			98	
cM capacity (veh/h)	712	929			1462	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	28	125	120			
Volume Left	2	0	23			
Volume Right	26	5	0			
cSH	909	1700	1462			
Volume to Capacity	0.03	0.07	0.02			
Queue Length 95th (m)	0.8	0.0	0.4			
Control Delay (s)	9.1	0.0	1.5			
Lane LOS	A		A			
Approach Delay (s)	9.1	0.0	1.5			
Approach LOS	A					
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			22.5%	ICU Level of Service		A
Analysis Period (min)			15			

Intersection: 1: Boston Church Road & Private Access/Lawson Road

Movement	EB	WB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (m)	16.7	27.0	11.0
Average Queue (m)	9.8	12.9	0.5
95th Queue (m)	15.8	22.6	5.5
Link Distance (m)	42.3	100.2	96.7
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Boston Church Road & James Snow Pkwy N

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	TR	L	T	TR
Maximum Queue (m)	23.4	37.8	35.6	30.5	62.4	69.5	39.4	9.5	11.0	21.0	18.4	1.7
Average Queue (m)	8.8	14.3	10.4	6.7	33.8	38.2	13.8	2.7	1.9	5.0	5.5	0.2
95th Queue (m)	17.7	30.3	26.8	19.7	58.2	63.2	30.2	8.3	8.0	15.4	14.0	2.1
Link Distance (m)		375.7	375.7		704.4	704.4		158.5	158.5		192.8	192.8
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	70.0			70.0			58.0			60.0		
Storage Blk Time (%)						0						
Queuing Penalty (veh)						0						

Intersection: 4: Esquesing Line & Lawson Road

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (m)	17.8	56.3	11.5	29.6	20.6	59.0	24.5	65.3
Average Queue (m)	6.0	21.7	2.4	12.3	8.5	24.9	8.7	26.3
95th Queue (m)	15.0	39.4	9.1	23.0	17.7	46.1	20.0	48.6
Link Distance (m)		1199.0		334.3		636.8		242.4
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)	24.0		41.0		44.0		33.0	
Storage Blk Time (%)	0	5		0		1	0	3
Queuing Penalty (veh)	0	2		0		1	0	1

Intersection: 5: Lawson Road & Site Access

Movement	SB
Directions Served	LR
Maximum Queue (m)	7.1
Average Queue (m)	0.5
95th Queue (m)	3.7
Link Distance (m)	73.6
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Boston Church Road & Site Access

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (m)	11.8	11.9
Average Queue (m)	4.7	0.9
95th Queue (m)	12.1	5.7
Link Distance (m)	73.6	493.3
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 4

Appendix E

TTS Query Excerpts

Fri May 02 2025 12:10:48 GMT-0400 (Eastern Daylight Time) - Run Time: 4029ms

Cross Tabulation Query Form - Trip - 2022

Row: 2006 GTA zone of origin - gta06_orig

Column: 2006 GTA zone of destination - gta06_dest

Filters:

2006 GTA zone of destination - gta06_dest In 4148

and

Start time of trip - start_time In 0630-0930

and

2022 Trip purpose of destination - purp_dest2022 In 10,

Trip 2022	5100,27
-----------	---------

Table:	5154,18
--------	---------

	5164,59
--	---------

,4148	5230,37
-------	---------

2569,43	7281,11
---------	---------

3324,97	7312,8
---------	--------

3354,28	7360,18
---------	---------

3,365,115	
-----------	--

3366,36	
---------	--

3368,10	
---------	--

3372,43	
---------	--

3375,12	
---------	--

3615,9	
--------	--

3636,44	
---------	--

4057,38	
---------	--

4103,71	
---------	--

4,104,136	
-----------	--

4105,58	
---------	--

4110,30	
---------	--

4,119,157	
-----------	--

4120,33	
---------	--

4123,8	
--------	--

4125,33	
---------	--

4126,19	
---------	--

4127,78	
---------	--

4132,18	
---------	--

4140,10	
---------	--

4149,52	
---------	--

4,160,130	
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4173,6	
--------	--

4196,11	
---------	--

5044,29	
---------	--

Cross Tabulation Query Form - Trip - 2022

Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest

Filters:
2006 GTA zone of destination - gta06_dest In 4148
and
Start time of trip - start_time In 1530-1830
and
2022 Trip purpose of destination - purp_dest2022 In 10,

Trip 2022
Table:

,4148
3324,8
3458,33
4059,16
4103,12
4105,12
4107,31
4110,7
4,119,113
4125,12
4154,38

Fri May 02 2025 14:11:38 GMT-0400 (Eastern Daylight Time) - Run Time: 3250ms

Cross Tabulation Query Form - Trip - 2022

Row: 2006 GTA zone of destination - gta06_dest

Column: 2006 GTA zone of origin - gta06_orig

Filters:

2006 GTA zone of origin - gta06_orig In 4148

and

Start time of trip - start_time In 1530-1830

and

2022 Trip Purpose of Origin - purp_orig2022 In 10,

Trip 2022

Table:

,4148	5100,27
468,8	5154,18
2569,43	5230,37
3324,97	7174,11
3,365,115	7312,8
3366,36	7360,18
3372,43	8937,86
3375,12	
3376,67	
3458,33	
3636,44	
4057,38	
4103,12	
4104,81	
4105,41	
4110,61	
4119,67	
4120,18	
4123,75	
4,124,104	
4125,73	
4126,19	
4132,18	
4140,10	
4148,9	
4149,36	
4173,6	
4194,91	
4196,11	

Appendix F

TAC GDGCR Excerpts

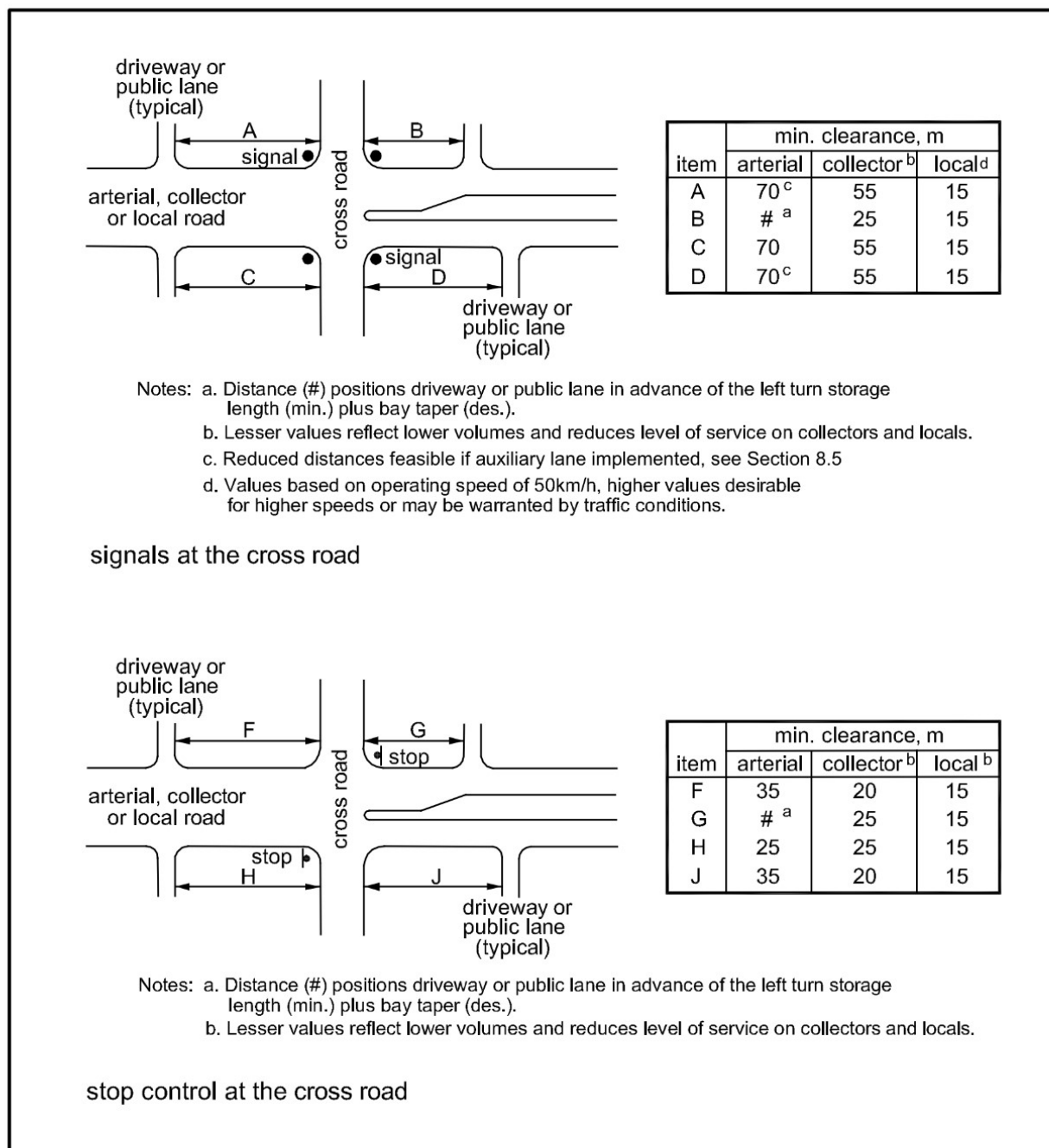


Figure 8.8.2: Suggested Minimum Corner Clearances to Accesses or Public Lanes at Major Intersections

Inadequate corner clearance between accesses and signalized intersections along a major road, such as a major arterial, can create serious operational problems including:

Stopping sight distance is the sum of the distance travelled during the perception and reaction time and the braking distance.

$$SSD = 0.278Vt + 0.039 \frac{V^2}{a} \quad (2.5.2)$$

Where:

- SSD = Stopping sight distance (m)
- t = Brake reaction time, 2.5 s
- V = Design speed (km/h)
- a = Deceleration rate (m/s²)

Table 2.5.2 gives the minimum stopping sight distances on level grade, on wet pavement, for a range of design speeds. These values are used for vertical curve design, intersection geometry and the placement of traffic control devices. The stopping sight distances quoted in **Table 2.5.2** may need to be increased for a variety of reasons related to grade and vehicle type as noted below.

Table 2.5.2: Stopping Sight Distance on level roadways for Automobiles⁵⁴

Design speed (km/h)	Brake reaction distance (m)	Braking distance on level (m)	Stopping sight distance	
			Calculated (m)	Design (m)
20	13.9	4.6	18.5	20
30	20.9	10.3	31.2	35
40	27.8	18.4	46.2	50
50	34.8	28.7	63.5	65
60	41.7	41.3	83.0	85
70	48.7	56.2	104.9	105
80	55.6	73.4	129.0	130
90	62.6	92.9	155.5	160
100	69.5	114.7	184.2	185
110	76.5	138.8	215.3	220
120	83.4	165.2	248.6	250
130	90.4	193.8	284.2	285

Note: Brake reaction distance predicated on a time of 2.5 s; deceleration rate of 3.4 m/s² used to determine calculated sight distance.

Table 9.9.3: Time Gap for Case B1, Left Turn from Stop

Design Vehicle	Time Gap (t_g)(s) at Design Speed of Major Road
Passenger car	7.5
Single-unit truck	9.5
Combination truck (WB 19 and WB 20)	11.5
Longer truck	To be established by road authority

Notes: Time gaps are for a stopped vehicle to turn left onto a two-lane highway with no median and with grades of 3% or less. The table values should be adjusted as follows:

- For multi-lane highways: For left turns onto two-lane highways with more than two lanes, add 0.5 s for passenger cars and 0.7 s for trucks for each additional lane, from the left, in excess of one, to be crossed by the turning vehicle.
- For minor approach grades: If the approach grade is an upgrade that exceeds 3%, add 0.2 s for each percent grade for left turns.
- Some road authorities use higher values for certain specialized vehicles (e.g., Alberta uses 22 s for very long log trucks).

The intersection sight distance along the major road (distance b in **Figure 9.9.2**) is determined by:

$$ISD = 0.278 V_{\text{major}} t_g \quad (9.9.1)$$

Where:

ISD = intersection sight distance (length of the leg of sight triangle along the major road) (m)

V_{major} = design speed of the major road (km/h)

t_g = time gap for minor road vehicle to enter the major road (s)

For example, a passenger car turning left onto a two-lane major road should be provided sight distance equivalent to a time gap of 7.5 s in major-road traffic. If the design speed of the major road is 100 km/h, this corresponds to a sight distance of $0.278(100)(7.5) = 208.5$ or 210 m, rounded for design.

A passenger car turning left onto a four-lane undivided roadway will need to cross two near lanes, rather than one. This increases the recommended gap in major-road traffic from 7.5 to 8.0 s. The corresponding value of sight distance for this example would be 223 m. If the minor-road approach to such an intersection is located on a 4% upgrade, then the time gap selected for intersection sight distance design for left turns should be increased from 8.0 to 8.8 s, equivalent to an increase of 0.2 s for each percent grade.

The design values for intersection sight distance for passenger cars are shown in **Table 9.9.4**. **Figure 9.9.4** includes design values, based on the time gaps for the design vehicles included in **Table 9.9.3**.

No adjustment of the recommended sight distance values for the major-road grade is generally needed because both the major- and minor-road vehicle will be on the same grade when departing from the intersection. However, if the minor-road design vehicle is a heavy truck and the intersection is located near a sag vertical curve with grades over 3%, then an adjustment to extend the recommended sight distance based on the major-road grade should be considered.

Table 9.9.4: Design Intersection Sight Distance – Case B1, Left Turn From Stop

Design Speed (km/h)	Stopping Sight Distance (m)	Intersection Sight Distance for Passenger Cars	
		Calculated (m)	Design (m)
20	20	41.7	45
30	35	62.6	65
40	50	83.4	85
50	65	104.3	105
60	85	125.1	130
70	105	146.0	150
80	130	166.8	170
90	160	187.7	190
100	185	208.5	210
110	220	229.4	230
120	250	250.2	255
130	285	271.1	275

Note: Intersection sight distance shown is for a stopped passenger car to turn left onto a two-lane highway with no median and grades 3% or less. For other conditions, the time gap should be adjusted and the sight distance recalculated.

Sight distance design for left turns at divided-highway intersections should consider multiple design vehicles and median width. If the design vehicle used to determine sight distance for a divided-highway intersection is larger than a passenger car, then sight distance for left turns will need to be checked for that selected design vehicle and for smaller design vehicles as well. If the divided-highway median is wide enough to store the design vehicle with a clearance to the through lanes of approximately 1 m at both ends of the vehicle, no separate analysis for the departure sight triangle for left turns is needed on the minor-road approach for the near roadway to the left. In most cases, the departure sight triangle for right turns (case B2) will provide sufficient sight distance for a passenger car to cross the near roadway to reach the median. Possible exceptions are addressed in the discussion of case B3.

The time gaps in **Table 9.9.3** can be decreased by 1.0 s for right-turn maneuvers without undue interference with major-road traffic. These adjusted time gaps for the right turn from the minor road are shown in **Table 9.9.5**. Design values based on these adjusted time gaps are shown in **Table 9.9.6** for passenger cars. **Figure 9.9.5** includes the design values for the design vehicles for each of the time gaps in **Table 9.9.5**.

Table 9.9.5: Time Gap for Case B2—Right Turn from Stop and Case B3—Crossing Maneuver

Design Vehicle	Time Gap (t_g)(s) at Design Speed of Major Road
Passenger car	6.5
Single-unit truck	8.5
Combination truck (WB 19 and WB 20)	10.5

Note: Time gaps are for a stopped vehicle to turn left onto a two-lane highway with no median and with grades of 3% or less. The table values should be adjusted as follows:

- For multi-lane highways: For left turns onto two-lane highways with more than two lanes, add 0.5 s for passenger cars and 0.7 s for trucks for each additional lane, from the left, in excess of one, to be crossed by the turning vehicle.
- For minor approach grades: If the approach grade is an upgrade that exceeds 3%, add 0.1 s for each percent grade for left turns.

Table 9.9.6: Design Intersection Sight Distance – Case B2, Right Turn from Stop, and Case B3, Crossing Maneuver

Design Speed (km/h)	Stopping Sight Distance (m)	Intersection Sight Distance for Passenger Cars	
		Calculated (m)	Design (m)
20	20	36.1	40
30	35	54.2	55
40	50	72.3	75
50	65	90.4	95
60	85	108.4	110
70	105	126.5	130
80	130	144.6	145
90	160	162.6	165
100	185	180.7	185
110	220	198.8	200
120	250	216.8	220
130	285	234.9	235

Note: Intersection sight distance shown is for a stopped passenger car to turn right onto or to cross a two-lane highway with no median and with grades of 3% or less. For other conditions, the time gap should be adjusted and the sight distance recalculated.

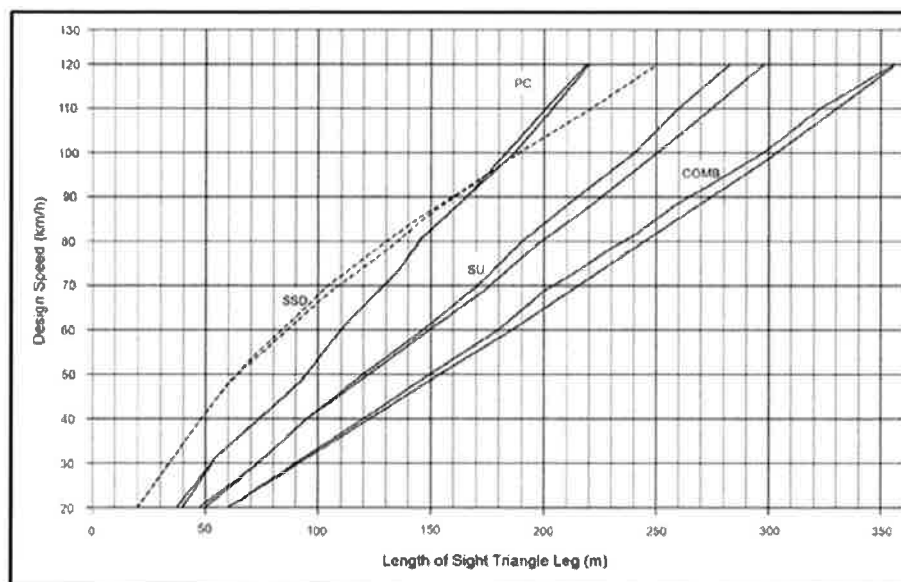


Figure 9.9.5: Intersection Sight Distance – Case B2, Right Turn from Stop, and Case B3, Crossing Maneuver (Calculated and Design Values Plotted)

Case F – Left Turns from the Major Road

All locations along a major highway from which vehicles are permitted to turn left across opposing traffic, including intersections and driveways, should have sufficient sight distance to accommodate the left-turn maneuver. Left-turning drivers need sufficient sight distance to decide when to turn left across the lane(s) used by opposing traffic. Sight distance design should be based on a left turn by a stopped vehicle, since a vehicle that turns left without stopping would need less sight distance. The sight distance along the major road to accommodate left turns is the distance traversed at the design speed of the major road in the travel time for the design vehicle given in **Table 9.9.11**.

Table 9.9.11: Time Gap for Case F, Left Turns from the Major Road

Design Vehicle	Time Gap (t_g)(s) at Design Speed of Major Road
Passenger car	5.5
Single-unit truck	6.5
Combination truck (WB 19 and WB 20)	7.5

Note: Adjustment for multi-lane highways: For turning vehicles that cross more than one opposing lane, add 0.5 s for passenger cars and 0.7 s for trucks for each additional lane to be crossed.

The table also contains appropriate adjustment factors for the number of major-road lanes to be crossed by the turning vehicle. The unadjusted time gap in **Table 9.9.11** for passenger cars was used to develop the sight distances in **Table 9.9.12** and is illustrated in **Figure 9.9.8**.

Table 9.9.12: Intersection Sight Distance – Case F, Left Turn from the Major Road

Design Speed (km/h)	Stopping Sight Distance (m)	Intersection Sight Distance	
		Passenger Cars	
		Calculated (m)	Design (m)
20	20	30.6	35
30	35	45.9	50
40	50	61.2	65
50	65	76.5	80
60	85	91.7	95
70	105	107.0	110
80	130	122.3	125
90	160	137.6	140
100	185	152.9	155
110	220	168.2	170
120	250	183.5	185
130	285	198.8	200

Note: Intersection sight distance shown is for a passenger car making a left turn from an undivided highway. For other conditions and design vehicles, the time gap should be adjusted and the sight distance recalculated.

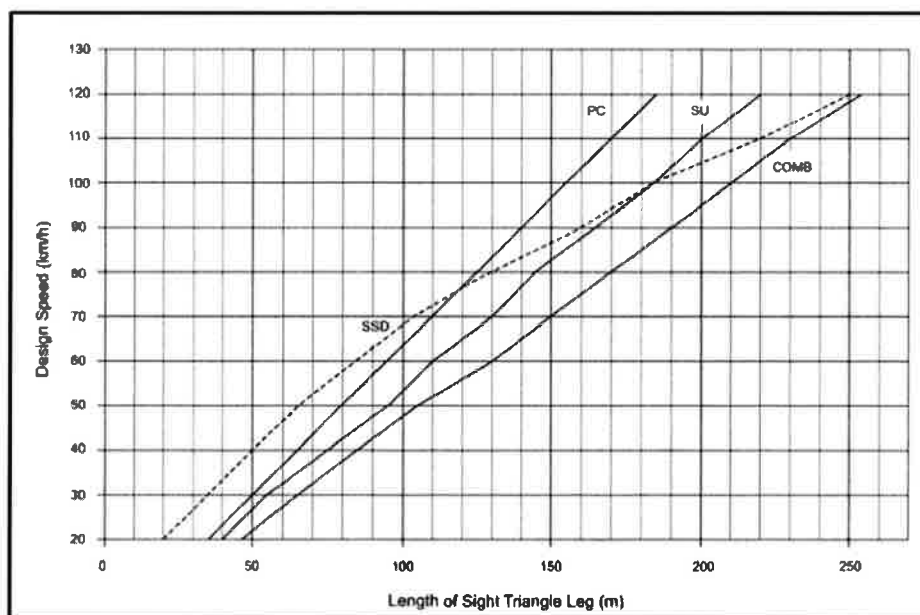
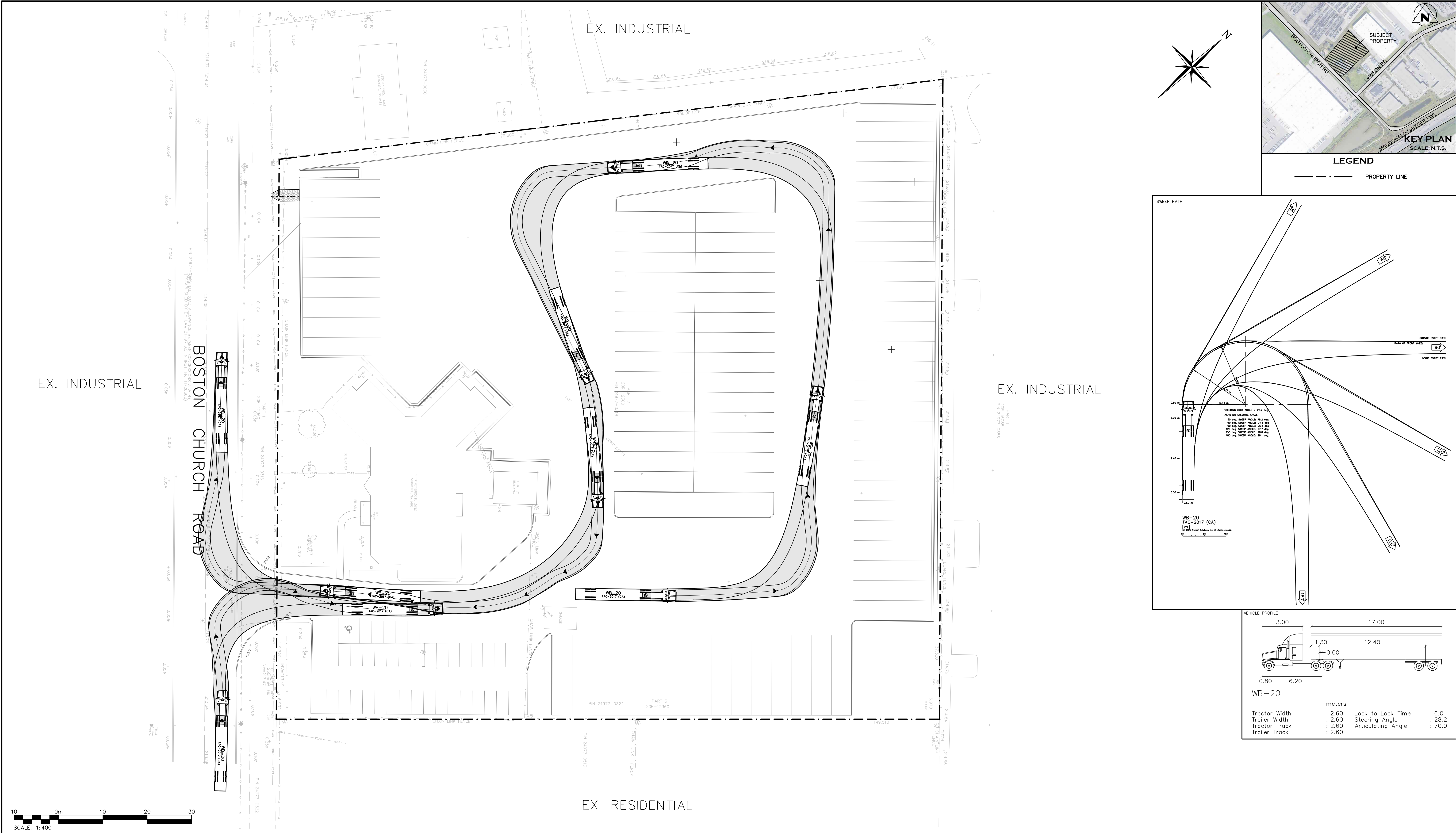


Figure 9.9.8: Intersection Sight Distance – Case F, Left Turn from the Major Road

Appendix G

Truck Turning Diagrams



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SITE BENCHMARKS:
SITE TBM 1: CUT CROSS ON CONCRETE SIDEWALK, 214.54M.
SITE TBM 2: CUT CROSS ON CONCRETE SIDEWALK, 213.64M.

SURVEY NOTES:
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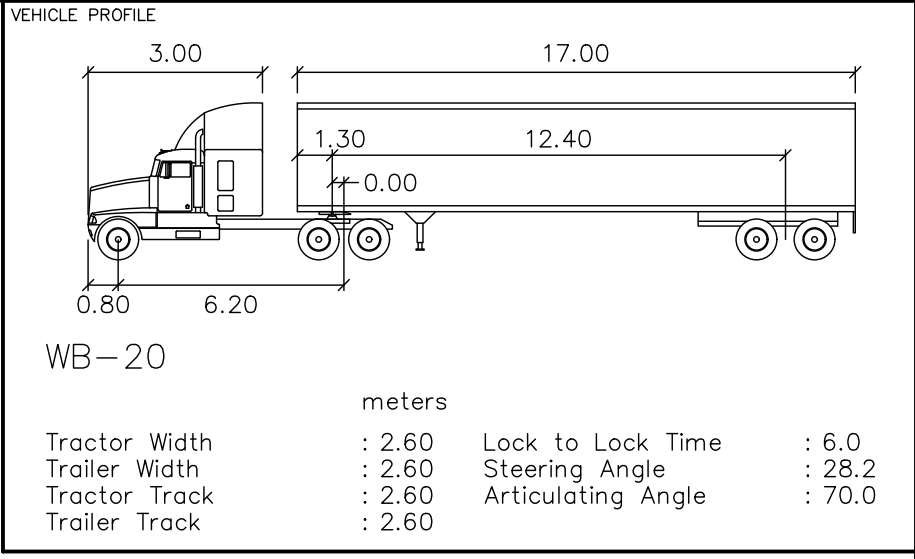
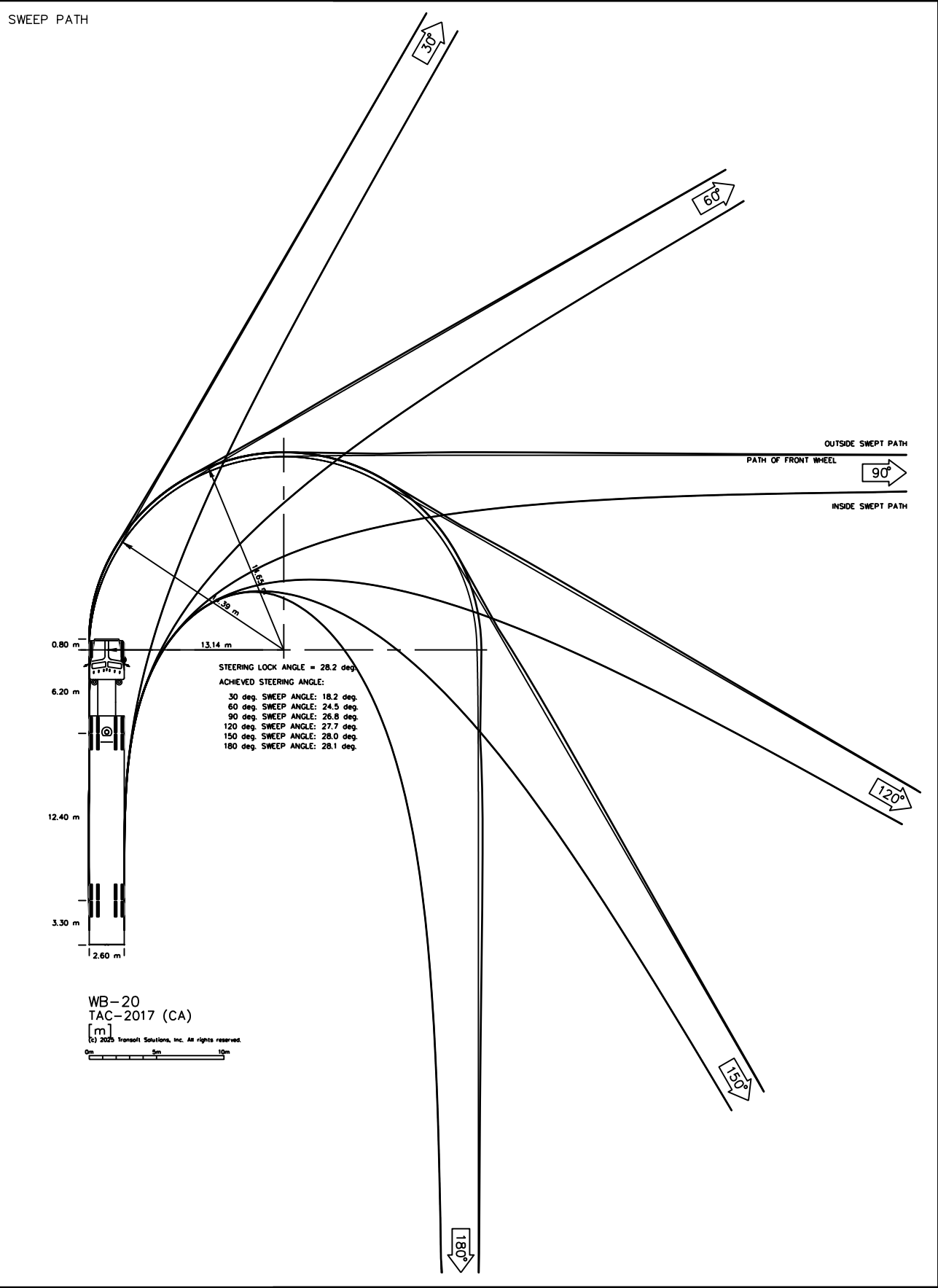
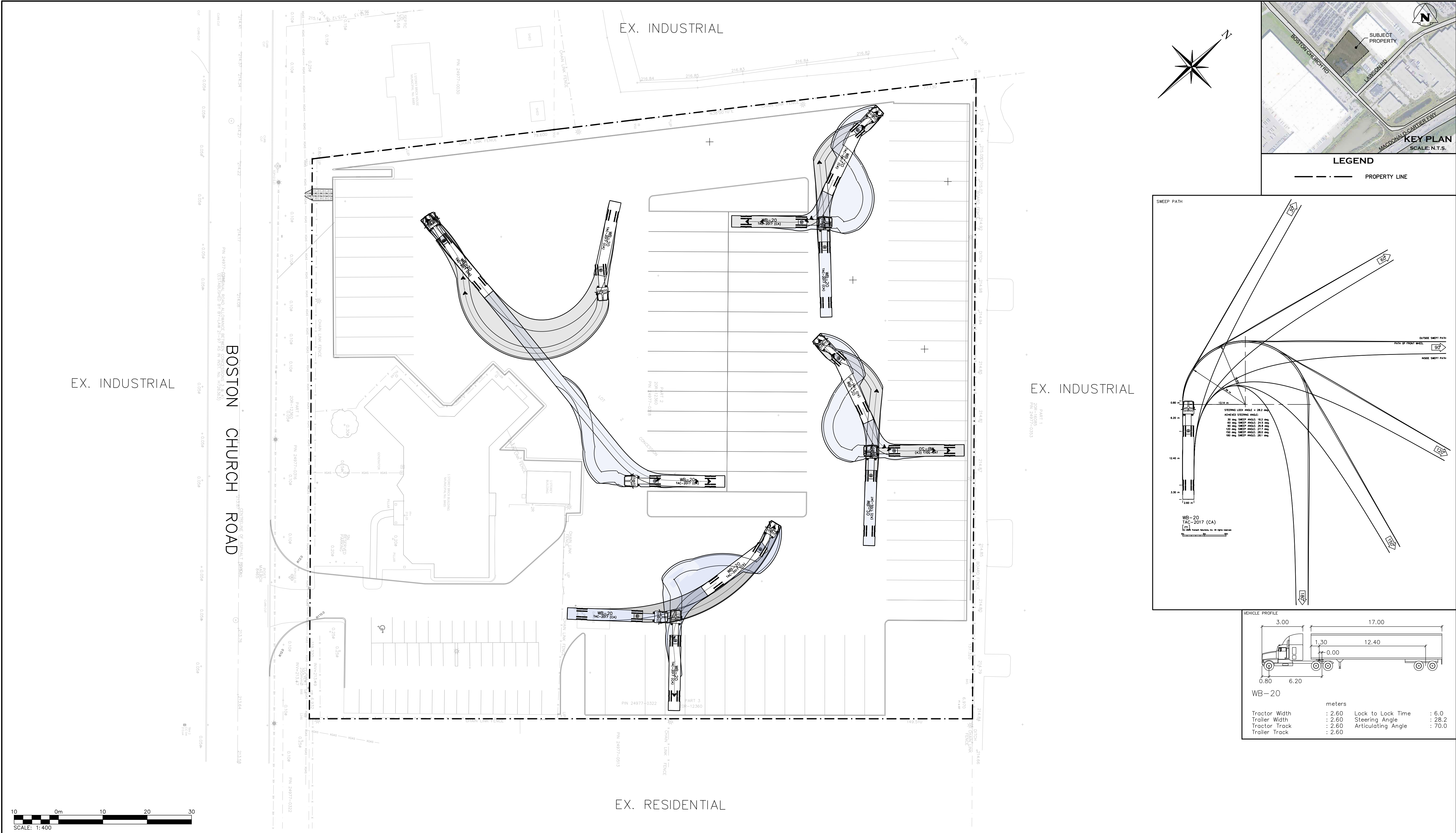
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Project
8465 BOSTON CHURCH ROAD
TOWN OF MILTON

Drawing
VEHICLE MANEUVERING ANALYSIS
WB-20

Drawn By	M.P.	Design By	M.P.	Project	2878-7432
Check By	S.S.	Check By	S.S.	Drawing	T101



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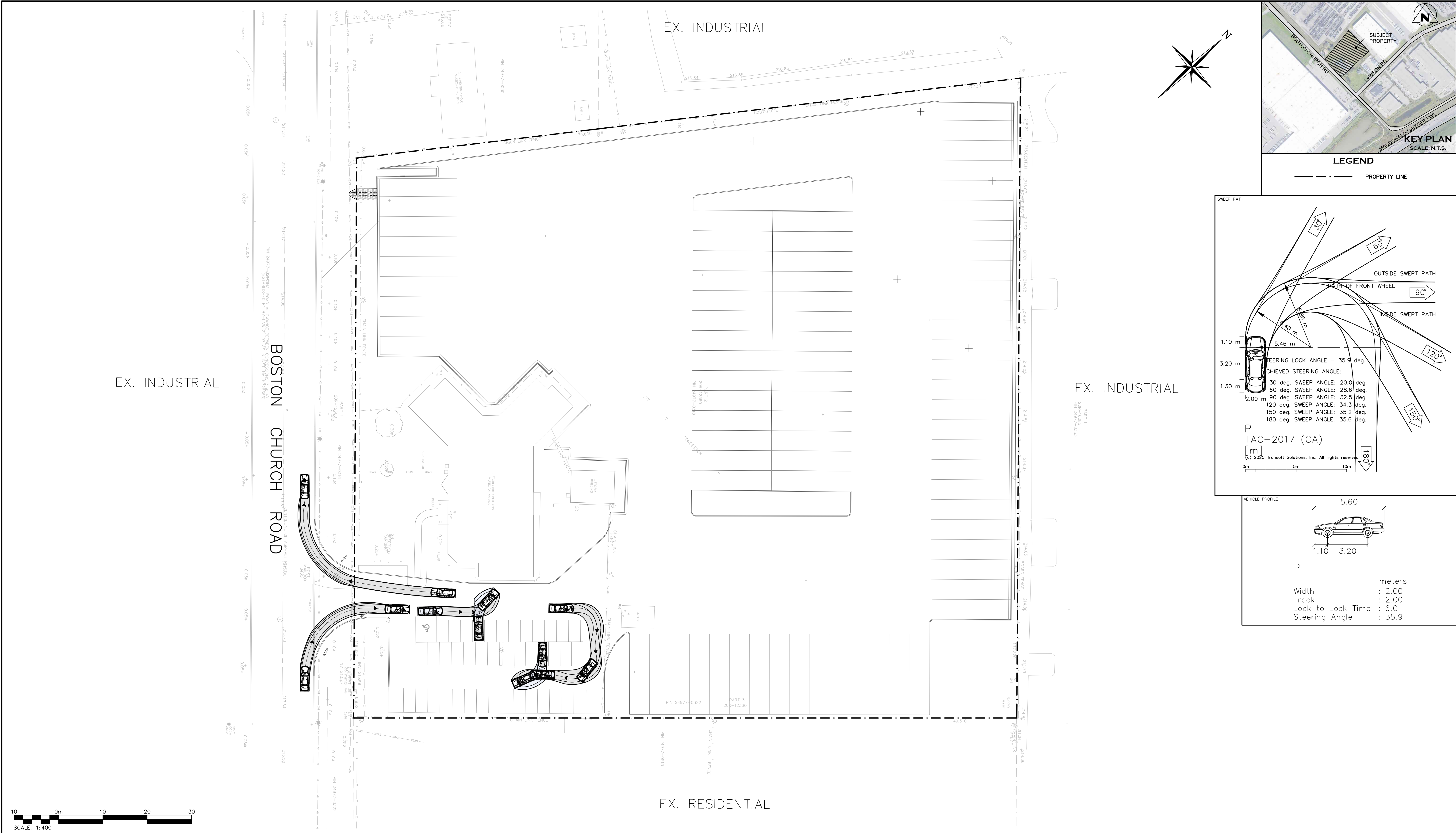
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Project
8465 BOSTON CHURCH ROAD
TOWN OF MILTON

Drawing
VEHICLE MANEUVERING ANALYSIS
WB-20

Drawn By	M.P.	Design By	M.P.	Project	2878-7432
Check By	S.S.	Check By	S.S.	Drawing	T102



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SITE BENCHMARKS:
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No.	ISSUE	DATE: YYYY/MM/DD
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Engineer

Engineer

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Project

8465 BOSTON CHURCH ROAD
TOWN OF MILTON

Drawing

VEHICLE MANEUVERING ANALYSIS
PASSENGER CAR

Drawn By	M.P.	Design By	M.P.	Project	2878-7432
Check By	S.S.	Check By	S.S.	Drawing	T103

Appendix H

Town of Milton ZBL Excerpts

TABLE 5A

ZONES	SURFACE TREATMENT EXEMPTION
M2 Zone	Rear Yard Only
Open Space Zone	All yards of <i>Public Parks</i> 2.0 ha or greater, excluding a minimum 15.0m <i>driveway</i> apron, and provided the <i>parking</i> area is <i>setback</i> a minimum 50.0m from any Residential Zone or Use.

and,

- xi) In addition to the provisions as set out above, for *single detached*, *semi detached* and *townhouse dwellings* with individual *residential driveway* access from a *street*, no person shall use any area of the *lot*, other than an *attached* or *detached garage*, or *driveway* for the purposes of off-street vehicular *parking*.

5.2 CALCULATION OF PARKING REQUIREMENTS

- i) Where the minimum number of *parking spaces* are calculated on the basis of a rate or ratio, the required number of spaces shall be rounded to the next highest whole number.
- ii) For the purposes of calculating required *parking*, the *Gross Floor Area* shall not include any area intended, designed or used exclusively for the *parking* of a *motor vehicle* and minus 10%.

5.3 MORE THAN ONE USE ON A LOT

The *parking* requirements for more than one *use* on a single *lot* or for a *building* containing more than one *use*, shall be the sum total of the *parking* requirements for each of the component *uses*, unless otherwise noted.

5.4 ADDITIONS TO BUILDINGS

- i) The *parking* and *loading space* requirements of this By-law shall not apply to any *building* in existence at the date of passing of this By-law so long as the *gross floor area*, as it existed at such date, is not increased nor the *building* or *structure* is used for a purpose that requires more *parking spaces*;
- ii) If an addition is made to the *building* that increases the *gross floor area*, additional *parking* and *loading spaces* shall be provided for the additional *gross floor area* as required by the regulations of this By-law;
- iii) Notwithstanding ii) above, where an addition is proposed for a single unit *industrial use*, the existing *floor area* shall be used in the calculation of requirements.

Type or Nature of Use	Minimum Off-Street <i>Parking</i> Requirements
<i>Hospital, Private or Public</i>	1 <i>parking spaces</i> per 40m² <i>gross floor area</i>
<i>Hotel, Motel</i>	1 <i>parking space</i> per guest room; <u>PLUS</u> 1 <i>parking space</i> per 10m² of <i>gross floor area</i> for accessory services devoted to <i>public use</i>, excluding hallways and washrooms
Industrial, <i>Cannabis Production and Processing Facility</i>	Parking is calculated for each individual <i>Cannabis Production and Processing Facility</i>, industrial and warehouse/distribution premises, including accessory office space, as follows: For the first 1000 m², 1 <i>parking space</i> per 30m² of <i>gross floor area</i> shall be provided. Any additional <i>gross floor area</i> shall be calculated in addition to the above provision and provided in accordance with the following rates: - For <i>gross floor areas</i> between 1001m² to 5000m² shall provide 1 <i>parking space</i> per 100m² of <i>gross floor area</i>. <i>Gross floor areas</i> greater than 5000m² shall provide 1 <i>parking space</i> per 200m² of <i>gross floor area</i>. Notwithstanding any provisions of the By-law to the contrary, accessory retail uses associated with the industrial or warehouse/ distribution use shall be included within the above noted calculations provided that the retail area does not exceed the lesser of 5% or 232.2 m² of the total gross floor area.
<i>Library</i>	1 <i>parking spaces</i> per 35m² of <i>gross floor area</i>
<i>Medical clinic</i>	1 <i>parking spaces</i> per 17m² <i>gross floor area</i>
<i>Motor vehicle body shop, Motor vehicle repair garage</i>	3 <i>parking spaces</i> per service bay
<i>Motor vehicle gas bar or Motor vehicle service station</i>	1 <i>parking space</i> for every 45m² of <i>floor space</i> dedicated to accessory retail sales

Type or Nature of Use	Minimum Off-Street <i>Parking</i> Requirements
<i>Night Club</i>	1 <i>parking space</i> per 5 m² of <i>gross floor area</i> <u>PLUS</u> 1 <i>parking space</i> per 18 m² of <i>patio area</i>
<i>Offices</i>	1 <i>parking space</i> per 30 m² of <i>gross floor area</i>
<i>Place of assembly</i>	1 <i>parking space</i> per 9 m² of <i>gross floor area</i>
<i>Place of entertainment</i> Indoor Playgrounds All Other Entertainment Uses	1 <i>parking space</i> per 20 m² of <i>gross floor area</i> 1 <i>parking space</i> per 9 m² of <i>gross floor area</i>
<i>Place of worship</i>	1 <i>parking space</i> per 5.5m² of <i>gross floor area</i> in the nave <u>PLUS</u> 1 spaces per 11m² of <i>gross floor area</i> for a public hall, <i>banquet hall</i> or community/multi-use hall if permitted and associated with or on the same site as the <i>Place of Worship</i>.
Police Station	1 <i>parking space</i> per 20 m²,
<i>Recreation & Athletic Facilities, Public Parks</i>	15 <i>parking spaces</i> for general park visitors; <u>PLUS</u> 1 <i>parking space</i> per 30m² <i>gross floor area</i> for all buildings, structures and pavilions; 30 <i>parking spaces</i> per baseball field; 30 <i>parking spaces</i> per soccer field; 4 <i>parking spaces</i> per tennis court Notwithstanding the requirements above, where a <i>Public Park</i> is 2.0ha or less in area no off-street parking is required Notwithstanding the requirements above, where any sports field or tennis court located within a <i>Public Park</i> having an area greater than 2.0ha and at least one lot line abutting a school property, no additional parking is required within the <i>Public Park</i> provided that the required <i>parking</i> for the school has direct access to the sports field or tennis court.

Type or Nature of Use	Minimum Off-Street <i>Parking</i> Requirements
<i>Restaurant and Restaurant, Take Out</i>	1 <i>parking space</i> per 9m² of gross floor area <u>PLUS</u> 1 <i>parking space</i> per 18m² of patio area
<i>Retail store</i>	1 <i>parking space</i> per 20m² of gross floor area
<i>School</i> Elementary School Secondary School All Other Schools Before and After School Programs	2 <i>parking spaces</i> per class room; 4 <i>parking spaces</i> per class room; 5 <i>parking spaces</i> per class room For Before and After School Daycare programs, refer to the parking requirements under “Day Care Centre”.
<i>Service and repair shop</i>	1 <i>parking space</i> per 20m² of gross floor area
<i>Social Services Establishment</i>	1 <i>parking space</i> per 30m² of gross floor area
Uses permitted by this By-law other than those listed in this Table	1 <i>parking space</i> per 30m² of gross floor area

5.9 ACCESSIBLE *PARKING* REQUIREMENTS (38-2019)

Designated accessible *parking spaces* for persons with a disability shall be provided in accordance with the provisions of this By-law and the Highway Traffic Act.

- i) The minimum required accessible *parking spaces* for persons with a disability shall be provided in accordance with the following:

TABLE 5H

No. of Required <i>Parking Spaces</i>	No. of Designated Accessible <i>Spaces</i>
1 to 12	1 Type A
13 to 100	4% (*1)
101 to 200	1 accessible parking space <u>PLUS</u> 3% (*1)
201 to 1000	2 accessible parking spaces <u>PLUS</u> 2% (*1)
More than 1000 spaces	11 accessible parking spaces <u>PLUS</u> 1% (*1)

Footnotes to Table 5H

- (*1) Where the minimum number of accessible *parking spaces* required is even, an equal number of Type A and Type B accessible *parking spaces* shall be provided. Where the minimum number of accessible *parking spaces* is odd, an equal number of Type A and Type B accessible *parking spaces* shall be provided but the last accessible *parking space* may be a Type B.

- ii) The total number of accessible *parking spaces* shall be included within the total required *parking* calculation for the *lot* or *use* and shall be rounded up to the nearest whole number;
- iii) Where required parking on a lot is calculated separately for a residential component, a visitor component, and/or a non-residential component and the parking is provided in a common parking area, the accessible parking required by this by-law shall also be calculated and provided separately for each of the individual components.
- iv) Accessible parking spaces shall be signed in accordance with the Town of Milton's Accessible Parking By-law and/or Highway Traffic Act; and,
- v) Accessible *parking spaces* shall be located in proximity to the primary entrance(s) to a *building* and shall have direct access to the entrance(s) by a minimum 2.2m wide unobstructed sidewalk or access route.

5.10 BICYCLE PARKING SPACE REQUIREMENTS (052-2018)(089-2022)

- i) The minimum *parking* requirements for bicycle *parking* shall be provided in accordance with the following:

TABLE 5I

Type of Nature of Use	Minimum Bicycle <i>Parking Spaces</i>
<i>Apartment Building and Mixed Use Building</i>	0.5 <i>long term bicycle parking space/ unit</i> (*1) PLUS 0.05 <i>short term bicycle parking space/unit</i> (*2)
UGC-MU <i>Apartment Building and Mixed Use Building</i>	1 <i>long term bicycle parking space/unit</i> (*1) PLUS 0.05 <i>short term bicycle parking space/unit</i> (*2)
<i>Dwelling, Retirement</i>	0.1 spaces/ unit
Elementary and Secondary <i>Schools</i>	5% of the required <i>parking spaces</i> for the <i>use</i> or <i>lot</i>
All other Commercial, Employment and Institutional <i>Uses</i>	3% of the required <i>parking spaces</i> for the <i>use</i> or <i>lot</i>

Footnote(s) to TABLE 5I

- (*1) *Long-term bicycle parking spaces* must be provided in a bicycle rack located in an enclosed, secure area with controlled access or within individual, secure, bicycle enclosures/lockers for use by the occupants of a *building*.
- (*2) *Short-term bicycle parking spaces* must be provided in a bicycle rack located in an easily accessible location and available for visitors to a *lot* or *building*.

- ii) Deleted;